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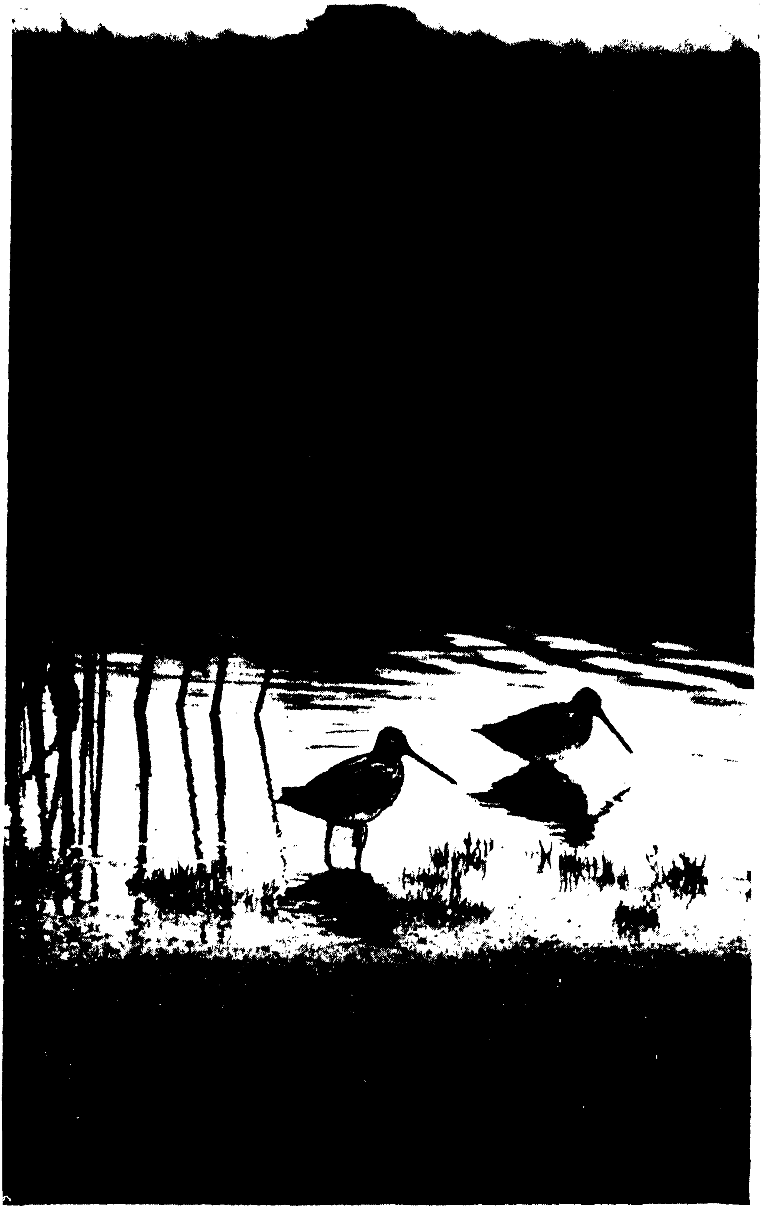

Plate 1

A WINTER MORNING: SNIPE ON THEIR FEEDING GROUNDS.

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EDITORS' INTRODUCTION

BY

THE RT. HON. THE EARL OF LONSDALE, K.G., G.C.V.O., D.L.

IT is with a deep sense of the honour conferred on the Lonsdale Library of Sports, Games, and Pastimes that the Editors have received permission to dedicate its volumes to His Royal Highness the Prince of Wales. Their first wish is to express their gratitude for being allowed to associate with the Library the name of an acknowledged leader of British Sport in the highest and best meaning of the word.

It is now a long time since a Library of volumes on Sport and Games was first put before the public. During these many years great changes have taken place, in men and in methods; how numerous and how great those changes have been, it needs no more than a glance at the text and illustrations of the older existing volumes to discover. The traditions, the customs, the guiding principles of the great sports and games doubtless remain; but as the years go on new discoveries are made, new developments follow, new methods are found to be successful. In the process of time these demand notice and explanation.

It would not be difficult to give examples of many such changes. A few may suffice. To take the sport of shooting first, even twenty years ago almost nothing was known of the nature and causes of what was vaguely called "disease" in grouse. The knowledge which research and examination have given us of these today has profoundly affected methods of moor management. Again, in regard to fishing, it is only of recent years that we have been able to piece together the life-history of the salmon by means of the reading of scales; we have learned much of the powers of vision of fish; and there have been many improvements in the manufacture of rods and tackle. To come to games. In cricket there have been alterations in the rules, fields are placed differently, modes of batting and of bowling are not what they used to be; in golf, changes in the standards of clubs and of the ball have in turn altered standards of play; and the lawn-tennis of modern Wimbledon is a different game from that of a past generation.

It is believed, therefore, that the Lonsdale Library should fill a gap. Its aim is to help and to instruct. It is intended in the first place for the beginner who wishes to learn all that the written word can teach him of his chosen subject, and to obtain authoritative advice on gear and in practice. But it is also hoped that the more experienced sportsman may find matter of interest in the pages of the Library, either in the bringing together of newly discovered facts or new suggestions for study, or in the comparison of other sportsmen's or players' opinions with his own. No pains have been spared to make the text and the illustrations as full and representative as possible, and if the various volumes succeed in their double appeal to the tyro and to the expert, the Library will have fulfilled the purpose of its Editors, which is, to make it complete.

Lonsdale

INTRODUCTION

THIS is an attempt, in the compass of a single volume, to deal briefly with the natural history of the various animals, birds, beasts and fish, which are associated with the activities of the sport of hunting, of shooting, and of fishing. Some of the subjects of the different chapters are not, it will be seen, " game " in the strict sense of the word; some are enemies of game—a description which I prefer to the term " vermin "—but all, I think, are from time to time in the minds and worth the attention of those who ride or carry a gun or use a rod.

ERIC PARKER.

HAMBLEDON,
SURREY.

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GAME BIRDS, BEASTS AND FISHES

CHAPTER ONE

Red Deer [*Cervus elaphus*]

OF all the animals of the British Isles, the red deer is the noblest. In stature, in carriage, in movement it is a splendid creature. A stag standing in the open with his nostrils taking the wind, or unhurriedly with long easy strides trotting up hill, or in an effortless leap clearing a high fence, is the finest sight which the fauna of this country can produce.

Red deer are red in summer, in winter they are brown shading to grey. The belly goes to a lighter colour, grey-white in winter, ochreous in summer. The legs are brown. The stag has a mane, in which there is grey, and the cheeks are grey. The nostrils and muffle are black and wet. On the rump there is a large, heart-shaped, ochreous yellow patch, broad near the base of the tail and narrowing towards the hock; and down the back to the tail runs a streak of black, which with the triangular tail forms a sharp contrast to the rump as the animal turns end on. Another marked contrast of shading is between the interior of the ears, which is white, and their tips and edges, which are black. For her size, the hind's ears are very long, and when she stands, as you may often see her, on the sky-line, they are the most noticeable part of her. Deer's heads vary much in shape and contour. Landseer has drawn some magnificent beasts, but you will see many less good-looking, in head and in antlers, on the hill.

As to size, a big stag stands 4 feet or more at the withers, and may exceed 20 stone in weight. He does not come to his full growth until he is six years old. The calves are born with white spots, which they keep till they change to their first summer coats. This spotted coat is a characteristic of the young of all deer.

Red deer are found in Scotland, England, and Ireland. They have always been native to these islands. Remains have been found belonging to the Pleistocene period, of which one of the most remarkable is a head which is in the Dunrobin Museum, the property of the Duke of Sutherland. It was discovered in 1869 in the bed of the River Halladale, and has twenty-six points, with beam above the bez point which is actually 9 inches. A finer head as regards length was dug up in a quarry at Bakewell in 1785, and is now in the British Museum. It carries fourteen points. The length of the horn is 48 inches, beam 6½ inches, and span 45 inches. I take the following table of records of great heads of British red deer from the late J. G. Millais's *British Mammals*:

Length on outside curve.	Circumference between bez and trez.	Widest inside.	Spread.	Points.	Where found.	Owner.
48	6½	—	45	7+7	Alport, Derby	British Museum
47½	8	—	—	5+8	Manchester Ship Canal excavations	Sir R. C. Brooke
42	—	32	46	21	Cresswell Bog, Northumberland	G. P. Hughes
40	7½	28½	43¼	9+12	Combermere, Cheshire	Duke of Westminster
40	7	—	—	—	Elgin	Duke of Westminster
38½	5	30	39¼	8+6	Ireland	Viscount Powerscourt
36½	5	25	35½	8+8	Ireland	Viscount Powerscourt
36	5⅛	—	42½	10+13	Ireland	Sir Douglas Brooke
36	6½	—	37½	19	Kerry, Ireland	Viscount Powerscourt
—	9	—	40	26	R. Halladale, Sutherland	Duke of Sutherland
34	5½	—	39¼	8+13	Co. Leitrim	J. Ormsby Lander

In Scotland the range of the red deer extends throughout the Highlands and the larger islands of the Hebrides, including Harris, the Lews, North Uist, Skye and Jura. Red deer have been introduced into Arran. In England there are a few to be found in Cumberland, but the main habitat is Somerset and Devon, over Exmoor and the Quantock hills. In Ireland there are two forests in the district of Killarney, and there is a large fenced forest in the extreme north-west, of which the only description I know is in Mr. Gilfrid Hartley's delightful book *Wild Sport and Some Stories.* But these forests, I believe, are not what they were before "the trouble."

All these deer, of course, are wild deer which have been always native to the country. Besides wild deer there are other deer in parks, where with better feeding than they can obtain in a wild state they grow heavier in weight and throw far bigger heads. Some of the best of English park deer are those of Langley, Melbury, Stoke, Warnham, Welbeck, Woburn, and Vaynol.

Many names belong to red deer. An adult male is a stag or hart, a female is a hind, and a young deer in its first year is a calf (not a fawn). A barren female, or one without a calf, is a yeld hind. Second year males are knobbers, knobblers or prickets; third year males are brockets, and a royal stag or royal hart carries a head of twelve points. There is a bastard word which has crept into the phraseology of stalking, by which a stag carrying a head of more than twelve points is called an imperial. This is a dreadful importation of modern fashion, and has no relation to the language of the chase or of stalking. The chase of the red deer, of which stalking is merely a development since the invention of the rifle, is derived from a Norman ancestry, and the word "imperial" has no ancestry at all. Pints are imperial, not stags. A stag carrying more than twelve points is a thirteen-pointer or a fourteen-pointer, or whatever else, and the word "imperial" should be expelled from the language of the forest, to which it has never rightly belonged.

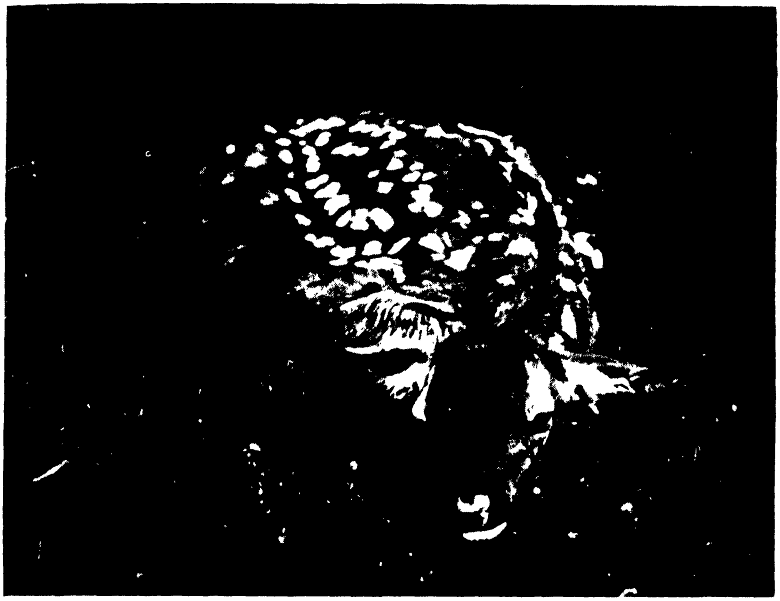
In the South Country today, over Exmoor and the Quantocks, Englishmen still hunt deer with hounds, even if the tradition of the chase has a little weakened down the centuries since Norman Kings rode afield. There remains for us a full account of the ancient ceremonies in a book written in the fourteenth century by Gaston de Foix, surnamed Phœbus. The title of the book—one of the great books of the world—

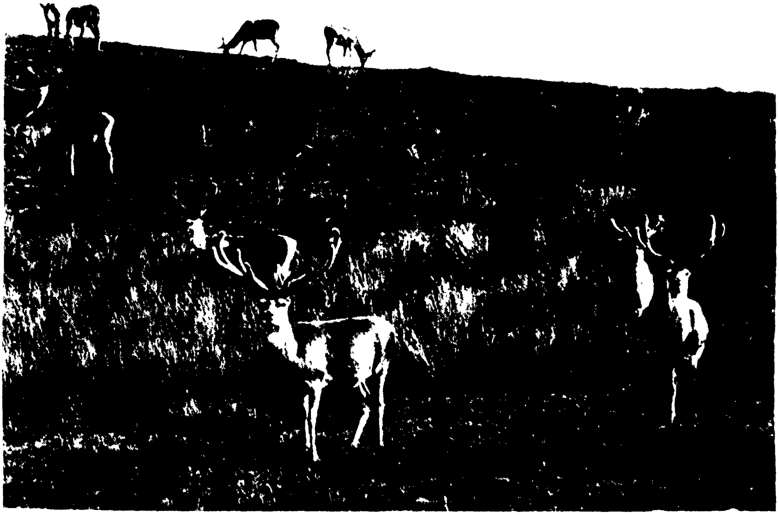
was *Miroir de Phébus des desduicts de la Chasse*, and it exists for Englishmen, under the title *The Master of Game*, in a translation made by Edward, Duke of York, who fell at Agincourt.

Deer are harboured today on Exmoor, and the elements of the old method remain, as they must in the hunting of wild beasts by man. In the old days the beginnings of the chase lay with the lymerer, or the man who held his lymer, his hound, in leash or liam. He looked for the track of the deer in the trees or on the ground. If the branches were torn high on the tree, then he knew that a great hart had passed that way. On the ground he looked for the slot, or trace, of the hart's hoof, and he took the scantilon, or measure, of it by laying a twig across the talon or heel. If it were three fingers' breadth, then he reckoned that it was a warrantable stag of ten points; if it were four fingers' breadth, then he knew that a great hart was there, treading heavily into the soil. He looked for other traces of deer, their fumes or droppings: if they were small, they were those of a small unwarrantable stag, a rascal; if they were so big as plainly to be those of a great hart, he packed them into his horn and stuffed in grass to keep them from breaking. Then he cut down a green branch and set it up so as to be able to find the place again next day, and if he thought there might be a chance of seeing exactly where the great hart was lying, he would climb a tree to spy.

All this the day before the hunt. In the evening the Master of Game warned the hunt servants for their duties. "When the King or my lord the Prince, or any of their blood will hunt for the hart with strength," directs Gaston, "the Master of the Game must forewarn over even the sergeant of the office and the yeomen berners at horse and eke the lymerers." The berners looked after the kennel; their dues to the lord were paid in bran, which was made into cake for the lord's hounds. Next morning the lymerer brought the scantilon and the fumes to the Master, and if he approved them, the hounds were divided into relays. These were three: first, the *vauntchasse*; second, the *midel*; and third the *parfitieres*, the trustiest hounds, who could be relied on to hunt the *parfait* line to the end.

So the hunt began with the lymerer laying on his hound on the *fues* or track (from the French *fuite*, flight) of the hart,





Plates 2—3

Top: RED DEER CALF COUCHING, AS LEFT BY THE HIND.

THIS IS THE ATTITUDE ALWAYS ASSUMED.

Bottom: IN VELVET: RED DEER IN JULY.

when the lord blew three long blasts—moots—on his horn, the Master of the Game next blew three more, and the hunters in order of office blew after him, and last the lymerer sent his hound into covert with the hunting cry, "Ho moy, ho moy, ho moy, hole, hole, hole!"

This went to the unharbouring of the stag. The lymerer followed his hound on the *fues* where he could see them, and if there were broken branches which showed the way the stag had gone, he called "*Cy va—cy va—cy va!*" When at last he caught sight of the stag, and was sure that he was the great hart they were to hunt, he blew a moot and a recheat—a long blast followed by three or four syllables, *Trou-rou-rou-rout, trou-rou-rou-rout, trou-rou-rou-rout.* That was the signal for the berner to uncouple his hounds, but he did not at first uncouple all. The stag had to be "soule," or alone when he was moved; if he was accompanied by a smaller stag, his "esquire," the berner laid on only one couple of hounds, until the great hart could be separated from his esquire, or any others that might be with him.

The hart was now fairly on foot. All the vicissitudes of the chase were to follow. The hunted creature might try tricks to throw off those who *quested* him; he might push up another stag and lie down in his place—that would be a *blenche* or a *ruse.* Perhaps he might turn on his tracks, then he would be *doubling* or *rusing to and fro upon himself.* Or he might take to water; if he swam upstream, he *beat up the river*; downstream, he *foiled down.* If he stood in water, he was *going* to *soil.* The place where he lay when he was roused was his *ligging* or *lair*; and if when he was found there he had other, lesser deer with him, he was *herd with rascal and folly.*

The relays waited where it was thought the hunt might pass. The berners were very careful, when one relay was taken up, that the next should be properly laid on the right line; or they might be at *defaulte*; or they might not be able to pick up the line at all—that was to check and to be on a *stynt*; or they might even run *contre*—that is, hunt a heel trail. But if all went well for the hunt, the hart that was *sued* became tired with the pressure of the relays, and hung his head as he ran—he *cast* his *chaule.*

The end then was near. He was known to be sinking, his ergots or dew-claws left their tracks deep in the ground, because of his weight and weariness, and the watching berner judged his time for the *vauntlay*, the last relay of hounds that was laid on before the hounds actually hunting had come up, so as to increase the pace of pursuit. The hart has nothing left. When "he hath been so well ronne to and enchased and entreved, and so oft relayed and vauntlaied to, and that he seeth that bi betyng up the Rivers or brokes nor foiling hem doun ne goyng soile, nor rusyng to or fro upon himself, which is to say in his own fues, ne may not help hym, than turne he his lede and standeth at a bay."

He might not stand at bay too long, or he would perhaps kill a hound. Or he might do so late in the season, which ran from the third of May to the fourteenth of September. So that when the other relays of hounds had come up to bay, one of the hunters was ordered to finish him. If the season was young and the stag's antlers were soft—"in velvet"—the hunter could "spay him" with a sword or hunting-knife sent into his heart. Later in the season, when the antlers were hard and sharp, there were still hunters who dared the spay, but the usual course was to end life with an arrow. Then, with the arrow in his heart, the stag was "encorned"; his horns were turned to the soil and the knife was drawn across his throat, and all those there blew the death "to make the bettir noyse." The *prise*, "the take," blown by the lord or the Master of the Game, or his deputy, ended the hunt.

But not the day. That finished with roast and wine. "The maister of the game ought to spekis to the officers that all the hunters soper be well ordeyned and that thei drynk nou ale, for no thing but alle wyne that nyght for the good and grete labour that thei have had for the lordes game and disport and for the exploit and makyng of the houndes, and also that thei be more merily and gladly telle what ech of hem hath don of alle the day and which houndes have best ronne and boldliest."

This was hunting with strength of hounds—*prendre à force de chiens*—and was the way of the old Norman *veneurs*. In a later day stag-hunting degenerated into deer-driving. This method is described by Gaston de Foix in a chapter entitled "The Ordinance and the Manner of Hunting when the King will hunt in Forests or in Parks for the Hart with Bows and Greyhounds and Stable." The Master of the Game would inform the master forester or parker of the place and time of the hunt, and the forester then warned the sheriff of the shire so that he should provide a sufficient number of "stables," or stations of men and hounds set about the boundaries of the hunted district, and also carts for the carrying of the deer which would be shot. The next step was to build stands or trysts for the King or Queen or Prince; these were "fair lodges to keep the King and Queen and ladies, and gentlewomen and also the greyhounds from the sun and bad weather," and were called *ramiers* or *folies* as being made of branches or leaves. (Is it possible that the various "follies" scattered over the country today mark the sites of what were once shooting huts?) The hunt then began by the harrier, the man in charge of hounds, letting loose his "teasers," which were a sort of mongrel greyhound, "to make the rascal void"—that is, to drive the lesser deer out of covert. The "hart hounds" were then uncoupled, to find "the great old wily deer that will not lightly void," and to "enchase him well and lustily and make him void both to bows and greyhounds." So the harts were driven up to the trysts, with the harrier hieing to his hounds by name, "*Oyez à Bemond, assemble, assemble,*" or whatever the hound was named, and as the deer were killed there were carts going about, to carry them to the *curée* or quarry, where the server laid them in a row, "all the heads one way, and every deer's feet to the other's back." When the drive was over, and all the deer laid in the *curée*, the King was asked whether he would hunt any more. If he would hunt no more, the King or the Master of the Game blew a moot, the King told the Master what deer were to be given away and to whom, and the deer were then skinned and broken up by the chief huntsman. There was a pride in the woodcraft of this, and even nobles and princes themselves would turn up their sleeves and work so cleanly that no bloodstains touched their clothes. The most delicate morsels, the *daintiers*, which were the tongue, the muzzle, the ears, the testicles, and " the sweet gut that some call the Inchpiane," were put aside for the King, and the rest were divided according to rank. Last, with holloaing and sounding of horns, the hounds were given their share, which they ate spread on the *cuir*, the hide of the stag. From this custom, of eating from the *cuir*, comes the word *curée*.

But all this was only a form of hunting, a change to suit the royal whim. The ancient ceremonial of the Norman *veneurs* was still in vogue in the days of James I, and there actually exist today the heads of six of the stags which he hunted. They belong to Ditchley Park, Oxfordshire, and in 1913 two of them were lent by Lord Dillon to an exhibition of British deer heads which was held in London, so that we can compare them for size with heads of today. The comparison does not lie between these and Scottish heads, for the size and weight of horn in a deer's antlers are largely a matter of feed, and Scottish deer often go hungry in winter. Nor can we compare them with the park-fed stags such as those of Warnham, for example, which may throw heads of thirty or forty points. The truer comparison, though even that cannot be exact, would be with the stags that can be hunted today on Exmoor, and if the best of the Exmoor heads are set side by side with the best of Lord Dillon's, I think it has to be admitted that heads are not what they used to be. The best of the Exmoor heads shown was that of a stag killed on September 5th, 1803, of which the measurements are: Points, 7+7; length 38½ inches, beam 5 inches, inside span 30¼ inches. And of Lord Dillon's two exhibited heads, one was an eleven-pointer, length 39 inches, beam 5½ inches, span 24½ inches; and the other was a thirteen-pointer, length 37½ inches, beam 5⅜ inches, span 33¼ inches.

Each of Lord Dillon's heads carries an inscription. In order of date the inscriptions ran:

1608. August 24, Satursday.
From Foxhole coppice round, Great Britain's King I fled;
But what? in Kiddington Pond he overtoke me dead.
1608. August 26, Munday.
King James made me to run for life, from Deadmans riding
I ran to Soreil Gate, where death for me was biding.
1608. August 27, Tuesday.
The King pursude me fast from Grange coppice flying
The King did hunt me living, the queens park had me dying.

1610. August 22, Wednesday.
In Henly Knap to hunt me King James's Prince Henry found me,
Cornebury Parke River, to end their hunting, drownd me.
1610. August 24, Friday.
The King and prince from Grange made me to make my race
But death near the queenes parke gave me a resting place.
1610. August 25, Saturday.
From Foxhole driven, what could I do, being lame? I fell
Before the King and prince, neere Rosamond her well.

These are the earliest heads which remain from the hunting of the old days. Were they, in turn, less than the heads which Gaston de Foix used to see? I think it is more than a supposition that they were, for the reason that the Continental red deer at which we can look today are unquestionably far smaller, and carry less fine heads than their ancestors. There are red deer heads in Germany of which the history is not known, and of which the proportions to modern eyes are incredible. I saw, at the Leipzig Hunting Exhibition of 1930, the three famous heads which are in the Moritzburg collection, and which are three that were saved out of 640 when the Castle of Augustusburg was burned in 1725. Their history cannot be traced further back than 1586, when they occur in an inventory, so that we can only guess at it, but they must have belonged to woodland red deer of a size to which there is no parallel today. The finest of the three carries eleven points on each antler, has an outside span of 75 inches, and tines 2 feet long. The beam is as thick as a man's arm.

Through the centuries the nomenclature of Norman venery has followed the chase of the deer. In Scotland today we use Norman names for the two tines next above the brow tine. For these three tines the old English names used to be "antler," "royal" and "surroyal"; today the antler is the brow tine, and the other two are "bay," which is "bez," and "tray," which is "trez." But in Scotland, of course, deer are not hunted, but driven or stalked, and it is the stalker who comes to know the habits and natural history of deer as can no other follower of their ways. I shall never lift a rifle at a stag again, but it is to days spent on the high ground and in the corries of Scottish deer forests that I owe some of the most delightful hours that a man can hope to spend in watching deer.

I remember nothing more clearly than the morning on which I first saw deer as they should be seen in Scotland, many at a time, from far off, in the heart of the hills. We had climbed up from the blaeberries and the ling by the burn, up through bracken and granite to the thin grass of the high ground. We had been climbing for long, and I knew nothing of that forest then, so that it was unexpected when my stalker dropped on his hands and knees and crawled warily to the rim of the brae, and I after him as I had been told. I did not guess what I should see. Two great shoulders of green and grey hill, one on either side; the burn wandering down a wide plain, here and there bright in the sun; blue hills one behind another beyond count to the sky, and, as I thought when I first saw that sight, a score or so of light brown bodies dotted about level green by the burn. A score ! My eyes travelled further, and wherever I looked, on other spaces of the plain, on plateaus set about the shouldering hills, under rocks, about ledges, in sunshine, in shadow, there were deer, hundreds of deer, walking, lying, grazing, moving quietly into the wind. Then I knew that I was seeing the finest sight that Scotland could show.

I have seen many deer since that day, close and far, but that vision remains. So does another of many years later, when I had been posted at a deer pass for a drive. I was on a rock and the deer had been moved a long way off in the wood. There was a rustle of leaves, and up towards the pass, walking slowly and cropping the grass, came a little procession, two hinds and a calf, then a small beast, not worth shooting, and close on his heels another. All of them passed as I was told they would, broadside on 30 yards away. Then came three more, the best an eight-pointer, and I waited for them, looking where the others had passed. Instead, I saw suddenly their tines as they ran close under the rock itself, behind me, by another path, out of sight. But I was glad enough, for I had seen deer as you may seldom see them, within a few yards' distance among trees, with the sunlight dropping through the leaves on their coats.

During most of the year, stags and hinds go in separate herds. By September the herds break up and the bigger stags begin to choose their hinds. A hind calves at three years old, and her calf is born usually in May. If it is a male, it begins to grow antlers the next spring. The first year these are merely a pair of prongs, about 6 inches long. The next year the young stag adds a brow tine, and the next a bez. Then comes a trez, and the general rule is that at four years old a stag is an eight-pointer, at five years a ten-pointer, and at six he may be a royal with brow, bez, trez and three on top.

Here the nomenclature of the attire or head of a stag differs a little today from that of earlier custom. Up to the end of the seventeenth century a stag's head was counted by the "croches" or "troches," which were the tines "on top," and the brow, bez and trez tines were taken for granted as the stag's "rights," the three tines which a warrantable beast must be supposed to possess as a matter of course. Also, in referring to the tines of a head, it was the custom only to use even numbers, and to double the number of tines of the antler which possessed the less. Thus a stag with brow, bez and trez and three on each top would be a head of "twelve of the less," and one with three on one top and four on the other would be "twelve of the greater."

Today the expression "his rights" is not used in Scotland, and bez and trez are often spelt "bay" and "tray." Also the group of three tines on top is known as "the cup," and has even been used to hold wine.

The rate of growth of a young stag's head is not invariable, and as regards shape, his head will often take after the pattern of his parentage. From six to perhaps sixteen he is at his best, and after that, if as a royal he has survived so long, his head begins to go back. But the growth of horn in any year will depend always on the feed he gets, and often on the weather. A stag which is a good royal one year may carry a poorer or a better head the next.

And what is a good, and what a first-class head? A good head should be long in horn, wide in span and thick in beam. Without these three qualities it cannot be first-class. But a first-class head needs more. In length, measured from the base of the coronet to the tip of the highest tine, it should be more than 30 inches. The inside span should approximate to 30 inches. The beam should be at least 5 inches. The tines should be long and the surface of the horn rough. Above all, the head should have the beauty of symmetry. A missing tine, or a tine wrongly curved, disqualifies.

Red deer under natural conditions shed their horns in late April or May; park-fed deer about a month earlier. A new growth then springs from the pedicle, and this, bulging gradually into the shape of head which the stag is to carry, becomes complete in a period of four months. Until the growth is complete, the horn, of a mucous tissue fed with blood, is soft and covered with a skin of grey-brown hair, and the stag is said to be "in velvet." When the horn hardens, the stag rubs his head against trees, peat hags, or anything else hard he can find, and with the skin hanging in strips he goes "in rags and tatters." When completely stripped he is said to be "clean," and until he is clean he is not, by custom of the forest, fit for the rifle.

Not all stags grow antlers. Some, for reasons which remain obscure, remain without horns all their lives, and are known as "hummels." Sir Harry Johnston, in the volume *British Mammals* in the Woburn Library, refers to these hornless stags as "polled" or "humble," but I have never heard either word used by a stalker, and certainly the word "hummel," which is used of awnless barley as well as of hornless deer, cannot be of Latin origin, but is derived from the Old English "hamelian" to mutilate. Other stags besides hummels do not grow normal heads, but go all their lives with a pair of single long antlers above the brow tine. These are known as "switches," and on some forests, to improve the breed, the rule is to shoot all hummels and switches on sight.

A hind brings forth a single calf at a birth, rarely twins. She keeps her calf with her while she is carrying another, and is a brave and devoted mother. It is a pretty sight to see a hind make her calf lie down and hide, which she does by pressing with her chin on its hind quarters; she will then bark at the intruder, evidently thinking her calf safe.

Stags begin to "roar" or "bell" at the end of September, and the rut follows. During the rutting stags lose condition rapidly, and an old stag near the end of the time becomes wretchedly thin, too weak, perhaps, to drive off the youngsters who are watching for their chance with his hinds. A young stag can serve a hind at eighteen months and get strong stock. As to fighting, I have never had the luck to see a fight between two stags in Scotland, and the fights I have seen among park deer have been pushing or wrestling matches rather than the furious charges described to me by stalkers. I have heard from a stalker of a fight between two hummels, both of which were shot, right and left. He told me that this was a kind of butting match, though an antlered stag tries to belabour his enemy with his brow tines.

Deer subsist chiefly upon grass, but they will also eat heather, and they like, too, the young leaves and shoots of trees. Their taste for something to chew ranges from bones to their own shed antlers, but it can be debased, too, and there are well-attested instances of deer gulping down a clutch of grouse eggs. Now and then, perhaps, a stag goes hungry, and will experiment on new forms of food. In a dry season stags weigh less than in a wet, when there is a good supply of grass, but there are forests today which carry altogether too many deer, particularly hinds, and the feed becomes soured. On these forests winter feeding is even more necessary than others. But as regards winter feeding, opinion among stalkers has hardened of late years. When I first stayed at a Highland lodge, and heard night after night talk about little else than the life of the hill, argument might sometimes run high as to the necessity or need for winter feeding. Today I should guess that you would find no one to contradict those who have urged that with our Highland winters there is no forest on which winter feeding is not necessary.

Red deer, except man, have few enemies. Their calves are sometimes taken by foxes and eagles, and eagles will try to beat a calf, or even a hind with her calf, over the edge of a precipice. But deer meet with strange accidents. One of the oddest belongs to a story told by Mr. Frank Wallace of a hind in Caithness. She had been nosing round a crofter's hut and somehow managed to poke her nose into an old tin pail without a bottom. She somehow got the handle behind her ears, and in her efforts to free herself the pail slipped over her head round her neck. The poor creature could not feed or drink properly, made a fearful clatter wherever she went, and frightened other deer for miles. She was at last shot, still wearing her necklace.

Accidents with wire are not uncommon. I have seen a photograph of the head of a stag, which for a long time was a forest puzzle; it looked as if the creature was wearing a sort of bush on his head. What he had done was to entangle his horns in a coil of wire used for fencing. And wire fencing can have other dangers. I once found in a wood on the shores of Loch Katrine the skeleton of a stag which had caught a hind leg in two crossed strands of wire, so that the more it struggled the tighter the wire was drawn, and there the unhappy beast must have lain and starved to death. Deer can be caught by the foot in other ways. They are good swimmers, and I believe there is more than one instance of a stag crossing a river and jamming his foot between two rocks, so that, unable to get a footing, he was forced down by the current and drowned.

Red deer vary little in the colour of their coats. There are many recorded white or so-called white stags and hinds. I remember a white hind in Glenartney which used to come close to the lodge, and was tame enough to allow strangers to pass close to her. And it was in that forest, too, that I was taken up to one of the famous breed of deer with a white blaze down the forehead. But we could not get nearer than 200 yards. It was during the War, when cartridges were difficult to get and could not be wasted in target practice. I knew neither the rifle nor the ammunition, and my shot passed over the beast's withers. My stalker, I fear, never forgave me, for he was young, and for the first time had taken his gentleman up to one of those almost legendary stags.

CHAPTER TWO

FALLOW DEER [*Cervus dama*]

FALLOW deer inhabited England in the earlier Pleistocene period, but oddly enough no antlers or bones have been found in the recent peat formations of these islands. This fact has led to the supposition that fallow deer died out during the second glacial epoch, and were introduced during historic times. If this is so, it is strange that remains of fallow deer should have been discovered in the superficial deposits of Denmark. It is also difficult to understand why the fallow deer, so hardy and cunning, should not have survived the glacial epoch, while the red and roe deer managed to do so. Is it not at least possible that similar remains to those found in Denmark may yet be discovered in this country?

Two types of pelage distinguish the fallow deer of English parks and the wild fallow deer of the New Forest, Epping Forest and elsewhere. The typical park fallow deer is fawn colour with large white spots, a white line along the flanks and a line of black hair along the back and tail, the underparts being greyish-white. Besides this type, there are melanic and white deer, and intermediate shades of roan, grey, yellow dun, and cream yellow. The New Forest fallow deer, on the other hand, are all of them alike, dark brown in winter, with dun legs and bellies, and chestnut in summer with white spots. Fawns are at first rather darker than their parents, and are spotted with white.

If these fallow deer were introduced into England in historic times, when did the introduction take place? They were brought by the Romans, is the usual answer, that being the easy way of accounting for the presence in England of any creature whose natural history is in dispute. Just in the same way the Romans are said to have introduced the pheasant. J. G. Millais, in his *British Mammals*, urges, on the other hand, that if fallow deer were introduced into this country at all, it is more likely that they were brought by the Phœnicians, who traded with Britain long before the Romans invaded the country. I see no reason for supposing that either the Phœnicians or the Romans should ever have handled either creature. Ships in those days were not large, and it would have been highly inconvenient to sail day after day with a number of wild deer on board, when the ship's cargo could consist of far more simple, more valuable, and more easily packed merchandise, such as beads. And in any case, what would an ancient Briton have wanted with fallow deer to turn loose into woods where he would not see them again? If he were ever possessed of a deer, his natural instinct would be to eat it.

Fallow deer were here, at all events, shortly after the Norman conquest, and Norman Kings and lords hunted them. They existed in large numbers, black, white and spotted, in Windsor Park in 1465, when Baron Leo von Rozmital, brother to the Queen of Bohemia, visited England and wrote in Latin a journal of his visit. But they were never hunted with the ceremony and spirit in which moved the hunting of the hart. "Men go not to sue him with a lymer nor do men go to harbour him as men do to the hart," writes Gaston de Foix, "nor are his fumes put in judgment as those of the hart." The buck was less noble a quarry. "When they are hunted they return again to their coverts and fly not so long as doth the hart, for sometimes they run upon the hounds" (they run in a ring). "They let themselves be taken at the water and beat the brooks as a hart, but not with such great malice as the hart, nor so cunningly, and also they go not to such great rivers as the hart." In one respect they surpassed the red deer; they ran faster when first moved.

If there were large numbers of fallow deer in Windsor Park in 1465, no doubt the custom must have been to drive the deer up to the King sitting in his tryst or ambush, as described by Gaston de Foix in his chapter "When the King will hunt with Bows." I should guess that Henry VIII preferred this method. Queen Elizabeth certainly practised it, and there are many legends of the days in which she took part. One is illustrated in a brass in the church of Walton-on-Thames, to the memory of "John Selwyn, gent, Keeper of her Matis Parke of Oteland under ye right honorable Charles Howward Lord Admyrall of England his good Lord and Mr." John Selwyn died on March 22, 1587, and on the brass is

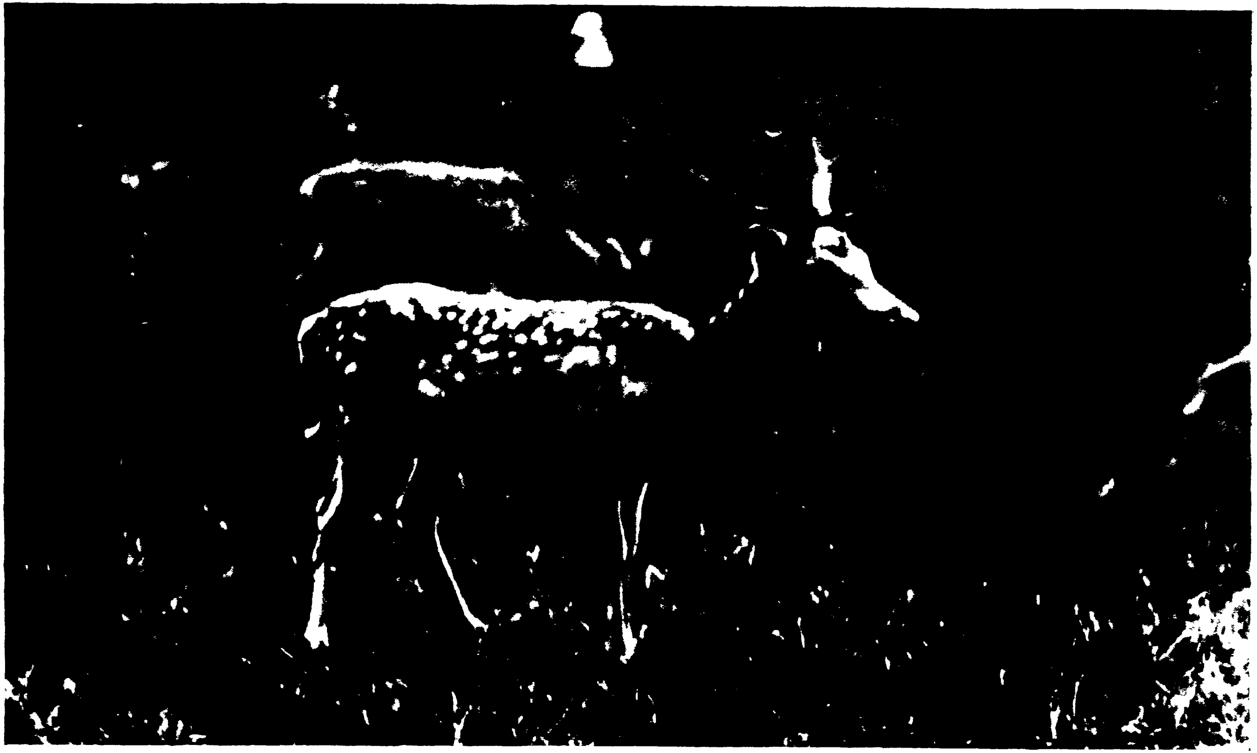


Plate 4

SUNLIGHT ON DAPPLED COAT: FALLOW DEER.

shown riding on the back of a stag, into whose throat he plunges a hunting-knife, and there are two stories to explain the exploit. One is told in the *Antiquarian Repertory*, and relates that Selwyn "in the heat of the chase, suddenly leaped from his horse upon the back of the stag (both running at that time with their utmost speed) and not only kept his seat gracefully in spite of every effort of the affrighted beast, but, drawing his sword, with it guided him toward the Queen, and coming near the presence, plunged it in his throat, so that the animal fell dead at her feet." Another version is that the stag was charging Queen Elizabeth, when a keeper leapt upon it and killed it, but was himself killed as it fell. But in that case, why engrave the incident on a brass to Selwyn? I prefer the *Repertory* story, and so I am sure would Queen Elizabeth, who very likely had the whole performance staged for her. In her rôle as Virgin Huntress she was no more scrupulous than in her other royal parts. Once at Cowdray Park there was a bower built for her, overlooking a small

Length.	Beam.	Tip to Tip.	Spread.	Width of palmation.	Points.	Locality.	Owner.
31	5	—	—	7	30	England	—
30	4¾	23½	26½	4½	10+9	Drummond Castle	J. G. Millais
30	4½	22	37	7	16+10	Drummond Castle	Earl of Ancaster
30	4½	16	34	5½	12+13	Petworth	J. G. Millais
30	—	—	37¾	—	—	Haddon Hall	Duke of Rutland
29½	5	17	28½	7¼	14+13	Petworth	J. G. Millais
28½	4	14½	26 inside	6	10+11	Woburn	Duke of Bedford
28½	4	—	34	6	19	Colebrooke, Ireland	—
27½	4½	14	31½	6½	15+20	Petworth	J. G. Millais
New Forest Deer.							
27	4½	—	25	—	—	New Forest	Hon. G. Lascelles
26½	4½	—	24	—	—	New Forest	Hon. G. Lascelles

paddock. Into this three or four fallow deer were driven, which she shot with a crossbow.

Fallow bucks begin to grow horns in the summer of their second year. In the third year the brow and tray tines appear, with a visible tendency in the top of the beam towards palmation. During succeeding years this palmation increases, with points thrown out from the posterior margin, and in the sixth year the horns are fully developed. The horns are shed later than the red deer's antlers, in May.

It will be seen from the table on page 33, which I take from *British Mammals*, that the heads of fallow buck which are park fed are heavier than those of wild deer. These are the best heads which were known to the late J. G. Millais.

The range of fallow deer throughout these islands is very considerable. There are wild deer in the New Forest and Epping Forest, but from Sherwood Forest, where Robin Hood hunted, they have vanished. There are small parties in various forests in Scotland, and in Ireland they range over parts of the west and south-west. But besides these wild deer and the many herds in private parks—I do not know how many of these have been disposed of since the War, but when Millais wrote in 1906, there were about 390 parks with deer, including Savernake, which though not enclosed, is counted as a park—there are always a certain number of fallow deer roaming wild in any extensively wooded piece of English country. There is a stretch of almost uninterrupted woodland, for instance, running from the south-west corner of Surrey into Sussex in one direction and through Sussex into Hampshire in another, and in the deeper woods of these counties fallow deer live and breed. They are doubtless some of them deer which have escaped from parks, but here again I see no reason to suppose that they may not have been wild in these woods for hundreds of years. There are fewer of them, no doubt, than there were before the War, for many trees were cut in those years and many deer were shot, but fallow deer are clever in hiding, and I have no doubt since the War, in some places, have got their numbers up again.

Before the War I often used to see these deer, or find their tracks in the snow, in my garden near Hambledon, and they still survive, though fewer in number in the woods near. A few years ago, one day in autumn, I had gone out into the woods and sat down in the sunshine with my back against a tree. I heard a pattering on the chestnut leaves, and through the scrub there came trotting towards me a fawn. It came on and on until it was only a few feet away, without seeing me. Then I suppose it saw me, or the wind shifted, for it gave one astonishing leap over a clump of young chestnut, and bounded away into the woods behind me. I waited, and heard other footsteps coming over the leaves. The mother was following her fawn, and as she came into the open she called to it with a curious little whine. But she saw me or winded me at once, and bounded back into the scrub. I waited still, and some minutes afterwards heard creatures moving through the wood some distance away, so I guessed that the two had found each other.

CHAPTER THREE

ROE DEER [*Capreolus capræa*]

IF the red deer is the noblest of our British animals, the roe deer is the most beautiful. Its shapely head, with its tapering muzzle, black and white nose and mouth, large dark eyes, and pointed ears exactly suited to the lines of its profile, is carried on a gracefully curved neck sloping to compact and muscular shoulders, while its legs are long and slender, its hoofs are small, and the creature carries itself with an easy daintiness as if it were aware of its own beauty.

The charm of the roe, indeed, is enshrined in one of the classics of sport. Charles St. John, in his *Wild Sports and Natural History of the Highlands*, has described a sight which he looked at, his rifle in his hand:

"Always graceful, a roebuck is peculiarly so when stripping some young tree of its leaves, nibbling them off one by one in the most delicate and dainty manner. I have watched a roe strip the leaves of a long bramble, beginning at one end and nibbling off every leaf. My rifle was aimed at his heart and my finger was on the trigger, but I made some excuse or other to myself for not killing him, and left him undisturbed —his beauty saved him."

Roe deer stand at the withers 24 to 27 inches, and measure from the nose to the tip of the tail some 48 inches. The coat in winter is purplish grey-brown, which changes about May to the summer coat of bright chestnut shading to buff on the belly and under the chin. The tail is very short, not more than 3 inches, and almost disappears in the long white hair of the anal disc. Fawns are dark brown, with lines of creamy-grey spots along the flanks. These spots are lost in the adult pelage.

Unlike the other British deer, roe are as a rule monogamous, but bucks have been seen accompanied by two or even three does. The doe drops her fawn in June, and in July the buck begins to court her, or rather pursue her, and then ensues a period of love-chasing, the buck running after the doe, often round and round in circles among trees, or even in figures-of-eight, making regular tracks in the soil. Pairing does not take place, however, until late in the month, and the regular rut comes on in August. Sometimes a doe which has not been impregnated in August will invite the buck again in October. And then follows the strange course of growth of the embryo, for in a doe that has become pregnant in August the embryo remains dormant and of a very small size until December, when the growth starts in the normal way; so that the period of gestation, with this deferred period at its beginning, stretches out over nearly eleven months.

It is difficult to account for this strange phenomenon. Possibly the reason is to be found in the probability that the original home of the roe was in Asia, and that when the race spread further west and north, with a colder winter, the time for the actual birth of the fawn was deferred until the cold spell was over.

Roe deer have existed in England since the Pleistocene epoch, when they were in large numbers and widely distributed. It is curious to note that while our native red deer have greatly deteriorated since prehistoric times, and while there is nowhere today a race of deer comparable in size to those of the Moritzburg collection, which I saw at Leipzig in 1930 and have described in another chapter, roe deer of the Pleistocene epoch were not, so far as we can judge from the heads that have been unearthed in different parts of the country, any different from those which fall to the rifle today. Indeed, if there were never any better heads than those which have been found in British peat deposits, there is even a slight improvement, for none of them equal the best of the modern heads from Scotland.

Roe deer have always been common in Scotland, but in England—or at all events in the south—the tendency after the fourteenth century seems to have been to decrease. The author of *The Master of Game* writes that "the roebuck is a common beast enough, and therefore I need not to tell of his making, for there be few men that have not seen some of them."

Various references to roe deer, as evidence of their abundance or scarcity, occur in old writers of a later date. Holinshed mentions that in the time of Henry V deer existed in "great numbers" in England, which were "thought to be very prejudiciall and therefore justly reproved of many." But of roe, he observes, "we have indifferent store." In the reign of Charles I they must have become very scarce, for the King asked for some to be sent to him from Naworth Castle, in Cumberland, and Lord William Howard paid a bill, entered in the Naworth Household Book:

1633. June 29. To severall persons for takeinge 31 Roekidds, as appeareth by bill .. .. .. vijli xijs vjd.

What became of these roe, which were turned out in Half-Moon Park, Wimbledon, we do not know. There seem to be no records of roe in later centuries, as regards southern England, and they must have been nearly if not quite extinct when in 1800 the Lord Dorchester of that date turned out some Perthshire roe into the woods at Milton Abbas, Dorset. From this stock sprang the large numbers which at the beginning of this century ranged through the woods of Somerset, Hampshire, West Sussex and south-west Surrey. Since that date, owing to the War, those numbers have been much reduced, as have fallow deer in the same part of the country, and for the same reason. Few people, I think, before the War realized how common they had become in Sussex and Surrey. I came first to live in south-west Surrey in 1911, and in the winter at that time fallow deer occasionally came from the woods into the garden. I have seen none in the garden lately, and only a few in the woods near, and I fear the case is worse with roe. I first saw roe deer in Surrey in 1914. It was in the early autumn and I was driving along a lane between Bramley and Hambledon, when a buck leapt over the hedge on my right, ran for a short distance in front of the car, and leapt over the hedge on my left. I did not know then that there were roe in the woods, and it was by an odd chance that I heard about them some weeks later. I was talking to a reservist soldier, and we found that we both came from the same part of Surrey. He had been a gardener to one of my neighbours, and when I mentioned the roe I had seen in the lane, he told me that it was one of a number for which he used to lie in wait with a gun, to keep them from eating my neighbour's roses. I thought again of Charles St. John.

The War, I am afraid, finished the roe in that part of

Surrey. Many of the woods were cut, the timber to be put to the use and the waste we all know. And the roe, I fear, came to an unhappy end, in the days of meat cards and short rations. There may be roe in Surrey lanes again, perhaps, in quiet days later; but I have seen none myself since that autumn morning, and I cannot hear of any damage done to-day to the local roses.

Whether or not there are too many roe in southern English woods for good forestry may be debatable, but there can be no question as to the mischief for which these beautiful little creatures are responsible among plantations in Scotland. They are killed down annually, on days when rabbits, woodcock and caper may be also in the bag, and when, unhappily, not all the roe that are shot at are laid out at the end of the day. It is a dismal job, to pour a load of shot at small deer bounding through the trees or pausing doubtfully in the open, and as fate has willed it on these winter days, I have never had to lift a gun at one. Nor would I ever aim a rifle, though that is a death a buck deserves better than an ignoble end by shot. Some men prefer stalking roe in the dawn of a summer morning to a day in September or October on the hill after a big stag. But to me a buck in his summer suit of chestnut is a creature to be looked at through glasses and not the sight of a rifle.

As to heads, the roe throws first two single spikes. The second pair are forked, and the third pair show the complete form, each antler being three-tined, the lower or brow tine thrusting forward and upward, and the back point, the hinder tine, backward and downward. The beam of the third pair may be from 5 to 7 inches, but it is between the fifth and ninth year that bucks throw their best horns, which measure from 8 to 11 inches, and after the ninth year the heads go back. Horns are shed as a rule early in November, but are sometimes carried into the New Year, and the growth of the horn at first is slow; I have seen bucks in the first week in January showing little more than the coronet. They go in velvet in April, and are clean by the beginning of May.

In 1928 Mr. Frank Wallace described in the *Field* some of the best roe heads in the unrivalled Altyre collection of Sir William Gordon Cumming. Of twenty of these, some of which are illustrated here, he has given the measurements, and these I reproduce. Some of them were shot by Roualeyn Gordon Cumming, others by Sir William or his father or uncle, either on Altyre itself or at Auchintoul in Aberdeenshire. Out of the many pairs of horns—over 100—in the collection others beyond the selected twenty would be reckoned as really fine, but of the twenty very nearly every head, if not every head, may be termed first class. As regards measurements, Mr. Wallace points out, it is not always easy to measure a roe head. The only measurement of a head about which there can be no difference of opinion is that from tip to tip of the horns. In regard to the others, there must always be a margin of error, and the most difficult measurement about which to be certain is the beam. If the horn is smooth, well and good; you can use a tape. But if you try to measure a very rough horn, it is not so easy, and Mr. Wallace is inclined to the opinion that it may be more satisfactory, instead of measuring the beam, to take the tape round the circumference of both coronets. It may happen, he observes, that an otherwise good head may have poor coronets, but as a rule it will be found that poor coronets go with a thin, poor horn, while well-formed coronets mean a strong and massive head. As regards this point, the measurements of the following table are interesting:

MEASUREMENTS OF SOME OF THE BEST ROE HEADS IN THE COLLECTION AT ALTYRE

	Length.	Tip to tip.	Circumference both coronets.	
No. 12 ...	11½	7¼	8¼	Brows: R. 3⅛, L. 4; Tops: R. 4, L. 3¾; Back: R. 3, L. 2⅞. Beautiful shape. Perfect points. Smooth outside and small coronets.
U	10½	2¾	8	Tops: 4¼. An old head. Back points slightly irregular.
C	10⅜	5⅝	8¼	L. top 4. Points 4+3⅝. Rather smooth and not very massive. Extra point posterior edge of right horn between brow and back points.

	Length.	Tip to tip.	Circumference both coronets.	
No. 45 ...	10⅛	5⅞	8½	R. brow 3¾. Rough, thick and with fine points. A perfect head.
Found 1926	10⅛	5¼	7¾	Found dead. A strong, heavy head, equal to any of those in the collection.
No. 4 ...	10	4	8½	Brows: R. 4½, L. 4½; Tops: R. 3½, L. 4⅛; Back: R. 3, L. 3; Points: 3+4. Magnificent brows and all the points very fine. Not quite such a good shape as No. 12.
Killed by a poacher	10	5¼	7¾	Shot by a poacher and given to Sir W. Gordon Cumming by J. G. Millais. Thin compared with some of the heads, but a perfect example.
No. 34 ...	9¾	7¼	9	Very massive, with long points.
No. 14 ...	9⅝	5¾	10¼	Very strong, exceptionally rough right up to the back points, and splendid coronets. The most massive head in the collection.
D	9½	6	9½	From Roualeyn's or Col. W. Gordon Cumming's collection. Points: 6+3. Very massive. Good shaped right horn. The brow forks into three points.
3-horned roe	9⅜	2¾	—	Three horns, with three distinct coronets. Third horn 7⅜ inches long, is much better than is usually found in the case of three-horned roe.
Malformed head	—	—	—	Semi-perruque head, partially covered with velvet and partially clean, about 8 inches in length, has a large number of points, probably about eleven, though it is difficult to ascertain. The coronets merge into a heavy mass of horn, the extra points forming at the posterior base of the horns themselves. The horn is quite hard and shows at the tips. No history is available, but it is quite evident that the buck was injured in the genital organs.

As to weight, it is a heavy buck which weighs 50 pounds, and a doe weighs some 10 pounds less. But there are districts in which the average weight is higher than elsewhere, and in a table kept by Mr. G. B. Macpherson Grant of 100 roe killed by himself, mostly on his own ground at Ballindalloch, the following weights occur, the average of the 100 being roughly 50 pounds:

Weight when killed (some slight allowance can be made for loss of blood).	Weight after being gralloched.	Weight ready for larder (head, neck and lower part of legs removed).
lb.	lb.	lb.
63	53	—
62	51½	35
64	—	38
62	52	
58	—	33
57	48½	35
57	48	35

Another remarkable record belongs to Craigellachie, where in June and July, 1914, Lieut.-Col. Pelham Burn killed bucks weighing 48, 60, 50, 60, 50, and 68 pounds, all weighed, after being bled, as they fell.

CHAPTER FOUR

CAPERCAILLIE [*Tetrao urogallus*]

THIS is the largest of the grouse family, and a noble bird indeed, a full-grown cock measuring little less than 3 feet in length, and weighing up to 12 pounds. He is an imposing fellow, with his glossy green-black beard-feathers, his dark neck shading into a breast of shining green down to black belly feathers tipped with white, white thighs and black tail barred with white; his feet are dark grey and a scarlet wattle tops his eye. Less conspicuous is the hen, but she too is a fine bird, black and buff-barred above, red-buff at the throat and chestnut-red about the chest, shading into buff barred with white and black. Her tail is black-barred chestnut and she too wears a scarlet wattle. Young birds of both sexes in their first plumage resemble their mother, and the cock in July and August goes in eclipse plumage, when his black and green turns to a shabby grey, and his beard feathers are thin and small. In eclipse, too, he is a poor flyer, very different from the huge bird of January sailing out over the glen.

Capercaillie, sometimes spelt capercailzie, is a name derived from the Gaelic *cabhar-coille*, "bird of the wood," just as *cabhar-athar* is the snipe, "bird of the air" (ether). Capercaillie belong naturally to all the northern pine forests of Europe and Asia, and are distributed southward to the Pyrenees, Alps, Carpathians and north-east Turkestan. They were originally indigenous to the north of England, Scotland and Ireland, and their bones have been found at Teesdale, in caves of mountain limestone, and also among Roman remains at Settle. The ancient Britons had a name for it, *Ceiliog coed*, "cock of the wood," and there are records to be found in old grants about the dates 1343 to 1361, in the county of Durham, showing that land was held by the tenure, among other payments, of supplying yearly one wood-hen, *Gallina sylvatica*.

But for whatever reason—and the cause remains obscure—capercaillie seem to have begun to die out in the eighteenth century. There is a somewhat doubtful record of a single bird killed near Fort William in 1815, but after that date, and probably long before, the bird was extinct in Scotland. It is not mentioned in the Game Act of 1831, and is therefore at the present time not game, though no doubt, when the long overdue revision of the Game Laws takes place, the capercaillie will be set as it should be side by side with the black grouse and the red. The existing stock in Scotland is descended from a number of birds imported from Sweden in 1837-38 by Lord Breadalbane and Sir Thomas Fowell Buxton. These were brought over from Sweden by the gamekeeper Lawrence Banville, who made the journey on purpose, and has described it in his diary, printed in Blaine's *Rural Sports*.

These birds were liberated at Taymouth, and have since spread from Perthshire into Aberdeenshire, Morayshire, Inverness, Forfar, Ross and Cromarty. No doubt they will spread further, for the bird is a traveller, and there are already capercaillie in the woods of Wigtownshire and Dumfries. All the more strange, since the imported bird takes so readily to new surroundings, that the indigenous strain should have died out.

Capercaillie are almost omnivorous feeders. In August they are to be found on the heather, and fill their crops with blaeberries. They are fond of raspberries and the young fronds of bracken, and in autumn take to the corn fields and sit on the stooks eating oats. Grain in any form attracts them, as gamekeepers know who find the maize taken from woodland rides where it has been scattered for pheasants. But it is not until the late autumn that they make their regular diet out of the shoots and buds of trees, and then the damage which they do to young plantations may be very considerable. Dunn in *The Capercaillie in Scotland* gives the contents of a crop which he examined in 1873 as containing "203 points of shoots of Scots fir, with the leading buds entire, 11 pieces of young wood 1½ to 2½ inches long, having leaves attached, but no terminal buds, and 52 buds—making in all 266 shoots and buds, besides a large handful of single leaves of the Scots fir, which the bird had devoured at one meal." In the crop of another bird which he opened in April, 1874, he found young shoots and leaves of larch, among them 918 buds. But the bird does not confine itself

Plates 5—6

Top : AT THE FOOT OF A SCOTS PINE: CAPERCAILLIE ON NEST.

Bottom : EARLY MORNING IN THE CAIRNGORMS THE BLACKCOCKS' BATTLE-GROUND.

to fir trees. Harting in his *Handbook of British Birds* mentions a capercaillie shot in November of which the crop contained a handful of oak leaves and 168 acorns.

Capercaillie are polygamous and the cock collects a harem in spring. It is at this time that he indulges in his love display, or "spel" as it is called on the Continent, to attract his hens. I have never had the good fortune to witness this, and so cannot compare any experience of my own with the varying descriptions of other writers. The cock selects a particular pine tree or sometimes a flat-topped rock as his "leking place," and there at dawn, stretching out his neck, drooping his wings, and spreading his upturned tail like a fan, he utters sounds which have been described differently by different authors. Howard Saunders, a careful observer, gives the sound as "peller, peller, peller." Lloyd, in *Game Birds and Wildfowl of Sweden and Norway*, likens the calls to "pellep," "klickop" and "hede," each repeated several times. J. G. Millais differs from both, and in *The Natural History of British Game Birds* writes that the bird utters a note something like the words "klick-kleck," repeated with intervals. It then turns the head upwards and backwards, uttering a variety of extraordinary noises or squalls, more like two cats fighting at a distance than anything else. There could hardly be a better instance of the difficulty of conveying to paper, so as to convince the reader, the sound of a call so variously heard.

In Scotland, fortunately, notions of sport differ from those of the Continent. In Austrian and other forests abroad the "lek" is accepted as the natural means of allowing the hunter to approach an otherwise difficult quarry. The sportsman ascertains the place of the "lek" and arms himself with a shotgun. The "spel" begins, and he knows that towards the end of it the bird will work itself up into such an ecstasy of emotion that it will become oblivious of its surroundings. He therefore approaches cautiously, three paces at a time, for at the beginning of the "spel" the bird is still wary and watchful. The moment of ecstasy arrives with the sportsman in range of the unsuspecting caper; up goes the gun, and the love-song comes to an end with a dose of shot. All in the breeding season, and a bird which when cooked tastes like a paint-pot.

In the Highlands his love-making goes more happily. His only enemies are his rivals. If there is a fight for the harem› it may end with the death of one of the suitors, or possibly with two birds too much exhausted to move.

Capercaillie nest as a rule in May, sometimes later on the high ground. The nest is no more than a scrape, and a favourite position is at the foot of a tree, or in the shelter of the branches of a tree that is fallen. The usual number of eggs is eight, but I have heard of twelve; they are large eggs, pale rufous grey blotched and spotted with madder brown. And as to the choosing of the site for the nest, it is a curious fact that the hen capercaillie after mating leads a separate existence, and apparently travels long distances to find fresh ground. It seems to be in this way through the hen bird that the capercaillie enlarges its range. I think it was in 1907 that a gamekeeper told me that he had not before that year known a caper to nest north of the Dee, and though I saw that nest, and other hen capercaillie, I never saw a cock. Another consequence of this roaming habit on the part of the hen caper follows when she has not been mated with the cock, but happens to meet a blackcock. There are many instances on record of capercaillie-blackgame hybrids, and a few of hybrids between capercaillie and pheasant.

Capercaillie are fine flyers and move at a pace very difficult to estimate. It is an experience which may come to even the best of game shots, to stand under a hill from which caper are being driven, to hear the crash in the tree-tops which means that an old cock has left his branch and is on his way over the guns, to see the great bird float out on level wings—for the cock caper, after a few rapid wing-beats, glides a long distance—and to miss so large a mark by a distance he would have believed incredible. One such vision will always remain in my mind, for the caper which came over the guns had been pushed out from trees high above them, and swung out the breadth of a Forfarshire glen into the sunset.

CHAPTER FIVE

Black Grouse [*Tetrao tetrix*]

NEXT to the capercaillie in size, the black grouse is considerably bigger and heavier than the red. The cock, or blackcock as he should be called, the female being the greyhen, is an extremely handsome bird, chiefly bluish-black in colour, tinged here and there with brown; there are patches of white on the wings, and the under tail-coverts are white, the tail ending in a broad lyre-shaped fork which is the blackcock's fine and distinguishing feature. But the bird in its eclipse plumage is by no means so striking in appearance. Blue-black becomes black-brown, the scarlet comb above the eye becomes a streak of red, and the tail is merely divided into two out-turned rounded ends.

The greyhen, like the female capercaillie, is by no means so fine a bird as her lord. She is a rich light brown, her feathers barred with crescent-shaped markings of black. As novices on the moor well know—and as even those who have shot many grouse may realize with unhappiness—her plumage is fatally like that of a grouse. On many moors it is the rule not to shoot greyhens, and with experience it is easy to tell the larger bird with its slower wing-beat from the red grouse, but many greyhens, for all that, fall to the gun. Whether the offending shooter has really done any harm to the breed may be doubtful. If he has shot a young and fertile hen, that means the loss of a brood next year; if he has merely rid the moor of a barren old wife, so much the better.

Young blackgame are reddish-brown in colour, streaked and spotted with black. About the beginning of August the young males, which are larger than the females, begin to show patches of black and white, but the plumage never becomes full even in the autumn, and their tails are only slightly curled. Legally they may be shot on August 20th, but they make a wretched mark, and deserve to be left at least till October. The practical difficulty as to that, of course, is that many tenants of moors have left Scotland in September, so that if the close time were extended from

August 20th to say October 1st, blackcock might not appear in the bag at all. Unless, of course, the law were disregarded as it is now in the case of old cocks. When an old blackcock comes over the guns at any date after August 12th, the custom on many moors is to shoot, for blackcock travel long distances, and as the keeper remarks in approval of the broken law, "Today he's here, and tomorrow where is he?"

Blackgame belong neither to the wood nor the moor, but to the fringe between moor and wood, where the greyhen nests in heather and rushy bottoms, laying from seven to nine eggs, yellow or yellowish-white, spotted with yellowish-brown. But blackgame belong, too, to rocky heights, above the moor, where you may see the cocks craning their long necks this way and that. They are wild, unapproachable birds—except the greyhens which are accidentally added to the bag, which often get up at the shooter's feet. And blackcock are birds of an obstinate will. You cannot drive blackcock. You can beat them out of a wood, but which way they will fly is their own choice. If they decide to break out at the side of a drive, no flanker can turn them; and if they choose to go over the guns, they may very likely fly down the line or even circle round and come back over the guns again. They can fly faster than grouse, following the rule that the bigger and heavier bird is capable of the faster flight; but they do not always do so, for grouse like flying down wind, and most people will tell you that blackcock do not, though that is a point on which I am doubtful. What is quite certain is that they do not dislike flying down wind, as is sometimes urged, because it disarranges their feathers. Mr. J. G. Millais, in *The Natural History of British Game Birds*, writes that blackcock "have a marked aversion from being 'pushed' beyond their regular pace. . . . This is probably due to the shape and length of the tail, which is blown out of position. Consequently they head up wind at once when the wind is going faster than they are." This of course is impossible. If they are flying down wind, the pace at which they fly is their own pace *plus* the pace of the wind, and the wind cannot possibly pass them. On the other hand, suppose that the wind were a gale of say fifty miles an hour, and a blackcock were flying at a pace of forty miles an hour, clearly the bird could not face the wind and fly into it, for it would merely be blown down wind.

In the spring blackcock, which are polygamous, hold a "lek," and with the hens looking on, go through a quaint display of dancing with fluffed-out plumage and half-spread wings. These displays often end in a fight, more or less serious. Of such a duel I know no more delightful description than that of the Hon. Sir John Fortescue, in his classic little book *The Story of a Red Deer*. The Hind and the Calf look on:

"While they watched them one splendid old Cock came waltzing slowly round, with his feathers all gleaming in the chill sunshine, and all the time looking out of the corner of his eye at one of the Hens. And as generally happens when people look one way and go another, particularly if they chance to be waltzing, he ran full against another Cock, who was just in front of him, and nearly knocked him over. Whereupon he asked the other Cock very angrily, 'Now then, where be coming to?'

"But the other answered quite as angrily: 'If you come knacking agin me like that, you old dumphead, I'll spoil your plumes for 'ee, I will.'

"Then the old bird shook out all his feathers in a towering passion, and said: '*You* spoil my plumes, you little, miser'ble, dirty-jacketed roog! You spoil my plumes! If you dare to come anigh me, I'll give 'ee such a dressing as you won't get over this side midsummer. I'll teach 'ee to call me dumphead!'

"But the other was quite as quarrelsome, and answered very rudely: 'You give me a dressing? I'd like to see 'ee try it. Git out of the way, and don't come here telling of your dressings. I bean't afeard to call 'ee dumphead. Now then! dumphead, dumphead, dumphead!'

"And with that they flew at each other, and pecked and scratched and ruffled, and beat each other with their wings, till all the ground was covered with their feathers. And all the time the Greyhens kept whispering to each other, 'He's down—no, he's up—no, he's down again. He's too strong for mun. Dear, dear, but the old bird's sarving mun bad!' And so he was, for after a hard fight the old Cock came back breathless, and crowed with triumph, screaming, 'Now then, who's the better bird?'

"And the Greyhens answered in chorus: 'Why, you be, my dear. Ah! you'm a rare bird, sure enough. Get your breath, my dear, for 'tis sweetly pretty to see 'ee dance.' "

These, of course, are Exmoor blackgame. Are there fewer than there were when *The Story of a Red Deer* was written? I fear that there are few counties where they are not a disappearing species, if not actually extinct. I have compiled the following list of localities where they used to be seen or still are seen, from a comparison of Harting's *Handbook of British Birds*, of which the information was partly gathered from the *Field*, and Millais's *Natural History of British Game Birds*.

Cumberland.—Bewcastle, Naworth, Netherby and Crossthwaite.

Westmorland.—About Shap, Raegill, and Lowther Woods, and Julian Bower.

Durham.—On the Yorkshire border near Stokesley and Lartington, Upper Teesdale and Weardale.

Yorkshire.—Near Sheffield and Huddersfield, and in Wensleydale, Nidderdale and Swaledale. About 1860 they were introduced to Birk Brow, near Guisborough, Tryup Head and Leverton Moor.

Lancashire.—On Winster, Cartmel and Furness Fells. They were unsuccessfully introduced in 1864 at Whitewell in Bowland, and at Easington Fell near Blackburn in 1895.

Cheshire.—Formerly in Delamere Forest, now cleared. At Boughton in 1892.

Derbyshire.—In the pine woods round Strines Edge, Glossop, Hayfield, and Castleton in the Peak.

Nottinghamshire.—Sherwood Forest, Inkersal, Newstead, Coleorton Corner, and Ratcher Hill.

Lincolnshire.—Introduced at Frodingham on Trentside, and at Caistor in 1871-2.

Shropshire.—Formerly on Whixall Moss: a few on the Cleehills, Corvedale, Church Stretton, Stiperstones and Char Forest.

Staffordshire.—Cannock Chase, where in 1860, 252 blackgame were killed in a day's driving. Other localities are Needwood (formerly), Chartley Moss, Leek, Cheadle and the Weaver Hills.

Leicestershire.—Formerly in Charnwood Forest and Sharpley until 1850.

Rutlandshire.—One shot in Burley Wood in January, 1851.

Northamptonshire.—Near Cranford and Grafton Park, straying from Sherwood Forest.

Norfolk.—Supposed to be indigenous in the Downham Market district, and have been introduced in various parts, principally near Thetford; but they die out.

Suffolk.—Introduced at Elveden, and at Friston, Aldeburgh, in 1850.

Warwickshire.—Near Sutton Coldfield in October, 1888.

Worcestershire.—Wyre Forest, Bewdley, Clee hills and the banks of the Teme near Eastham.

Herefordshire.—Found on Cusop Hill and the Black Mountains, Bircher Common, Shobdon, Craswell and Stoke Edith.

Oxfordshire.—Forest Hill, 1836; Tackley, near Woodstock, 1880.

Buckinghamshire.—Hyde Heath, near Chesham, 1852.

Berkshire.—Introduced at Windsor and Ascot in the 'sixties.

Surrey.—There were blackgame on Leith Hill in the 'seventies, and up to the late 'eighties they were to be found in the Camberley district. They used to breed on the Pudmoors near Godalming and about the Frensham Ponds in 1890 and 1896, and were to be found on Hindhead, where Mr. E. W. Swanton of the Haslemere Museum saw a pair in 1906. But they are now extinct throughout the county.

Sussex.—Formerly in St. Leonard's Forest and Ashdown Forest; in the 'nineties on Blackdown, but now extinct.

Hampshire.—Possibly stragglers may still survive in the New Forest and Wolmer Forest, but probably extinct.

Wiltshire.—One in Winterslow Woods, Ellesbourne, Vale of Pewsey and Compton Bassett.

Dorsetshire.—On the heaths between Alderholt and Knighton; Bloxworth Heath, Chamberlayne's Heath and Hyde Heath.

Somersetshire.—On the Quantock and Brendon Hills, and the northern skirts of the Mendips, Winsford and Oare.

Devonshire.—On Exmoor and Dartmoor, and the Haldon and Blackdown Hills. But they are decreasing.

Cornwall.—Until recently on the Bodmin Moors, Kilmar and Desmare Pool districts.

In *Wales* Harting has records of blackgame in Carnarvonshire at Vaynol, in Merionethshire at Bala, in Montgomeryshire north of Lake Vyrnwy, and in Pembrokeshire at Trecwm. In Breconshire it has been fairly common near Trecastle, and occurs elsewhere in the same county. The Welsh names for it are *Ceiliog du*, black cock, and *Ceiliog-y-mynydd*, cock of the hill.

In *Ireland* it is questionable whether the black grouse was ever a native. It has been turned out in various places at various times—at Claggan by Lord O'Neill in 1829; at Glenarm in 1839 by Lord Antrim; and elsewhere, but it has always disappeared. In the Dublin Museum, as recorded by Mr. G. H. Barrett-Hamilton in *The Irish Naturalist*, in February, 1899, Mr. Lyddekker recognized certain bones from Ballymintra Cave, Co. Waterford, as having been those of black grouse; but Mr. Ussher, in his *Birds of Ireland*, published in 1900, says that these bones resembled those of a black grouse less closely than those of a small domestic fowl.

The real home of the black grouse is in Scotland. In England the record is one of gradual but sure extinction, and if any single cause is to be sought for the decrease in the bird's numbers in England, the simple reason is the increase of population and building. Blackgame are birds of the wild, and need ample spaces of air and covert. Once they had those as near to London as the Surrey Commons. In John Rocque's map of Surrey, made in 1762 and dedicated "to His Royal Highness William Henry Duke of Gloucester and Edingburgh, by His Royal Highness's most hble and oblig'd servant Mary Ann Rocque," there are miles of trackless heather, where today are the parallelograms of Aldershot and the villas of Hindhead. South of Chobham Ridges lies a broad plateau labelled Romping Downs, a name I cannot find on today's maps; instead, these are the rifle ranges between Pirbright and Farnborough. How should blackgame endure the change? They are not easy birds to be sure of in the wildest and least disturbed surroundings. Of her brood of eight or nine young, perhaps only three or four—or fewer—will grow to maturity; and you cannot at will increase the stock. True, stocks have been increased in the past by the policy of sparing the hens, but unless this policy during the shooting season is accompanied by some system of getting rid of old and barren hens—such as shooting those that come to the "lek" when the younger hens are all sitting, say at the end of May—almost as much harm as good may be the result, for the old hens are quarrelsome and harry the young. There is no more obvious virago than the old greyhen that gets up at the shooter's feet in August and flies to the branch of some distant pine, to proclaim with duck-like noises that she is the sole inhabitant of that wide area of blackgame ground.

And it is only on true blackgame ground that any methods or attempts at method of increasing a stock of blackgame can possibly succeed. Attempts to re-establish the bird where it has once died out will fail. If we needed any further witness to the fact that the bird is disappearing, it would be the appearance in what were once, or perhaps are today, blackgame quarters, of another wanderer. Wherever the hiker carries his pack, the wilderness vanishes.

Blackgame as regards diet of insects and vegetables are almost omnivorous. Among the contents of crops examined by Mr. Millais are insects, grass, heather, rush seeds, trefoil, sorrel, sedge, grain, potato tops, turnip, blaeberries, raspberries, strawberries, cranberries, bearberries, rowan berries, larch shoots, shoots of Scots fir, and birch buds.

Blackcock weigh from 3 pounds 8 ounces to 4 pounds 4 ounces and greyhen from 2 pounds 4 ounces to 3 pounds. As to plumage, pied blackgame are rare, but are occasionally met with; there is a very fine pied blackcock in the Natural History Museum. Hybrids between blackgame and capercaillie are not infrequent; they are less common with the red grouse, a monogamous bird; but the polygamous cock pheasant often mates with a roaming greyhen, she, because of her wandering habits, finding herself without a blackcock companion.

CHAPTER SIX

PTARMIGAN [*Lagopus mutus*]

PTARMIGAN are birds of the height. They belong to mountain ground from Perthshire and Argyllshire to the north, and are more likely to be met with by the deerstalker than the grouse shooter. I have seen ptarmigan in the bag after a day's grouse shooting, but that has happened when some of the walking has been on the tops, on ground under the hills of a deer forest. For myself, my main acquaintance with ptarmigan has been in a day's stalking, when what had looked like grey stones have suddenly hurtled out into blank air below, or when I have seen ptarmigan in front of me and have almost come up to them, so unafraid they seem to be of the human being they see so seldom.

All through the year ptarmigan are changing their plumage. In the summer the general scheme of colouring of the male is ash grey pencilled with black, the underparts white, and the eye wattle scarlet. The female mixes her greys with buff, and edges her plumage above with black. These colours change gradually to white for winter—though pure white only comes to the birds in very cold seasons—the cock retaining a black patch between his eye and beak, and, of course, above his eye his scarlet wattle.

These birds nest later than the red grouse, as would naturally be expected from their surroundings. The nest is little more than a scrape, or perhaps a natural hollow, lined with bents and a few feathers. The site is on broken ground, with granite to match the hen's plumage and the stems and tinted leaves of stunted shrubs and cranberry to suit the mottled eggs, which are paler than those of the red grouse and splotched less thickly with brown. The food of ptarmigan is much the same as that of the Norwegian ryper, and consists of the leaves and fruit of blaeberry, cranberry and crowberry, and the leaves of dwarf sallow and birch. They pick up large quantities of quartz grit.

Ptarmigan raise nice questions of bird protection. Their

Plates 7—8

Top: ON THE HIGH HILLS: PTARMIGAN SHELTERING YOUNG.
Bottom: IN GRASS AND HEATHER: RED GROUSE ON NEST.

great enemy is the golden eagle, and if the owner of the ground on which they breed is a deerstalker, and wants his forest cleared of such nuisances as grouse, ptarmigan and blue hares, which by their movement may give away his presence to his quarry, he very naturally protects the golden eagle. If on the other hand he should be one of the fortunate few who own ptarmigan hills as others own or rent grouse moors, he, like the gamekeeper whose grouse drive has been spoiled by the golden eagle swinging in the blue above the butts, may consider that the protection of eagles in Scotland has been carried too far. All this gives matter for thought; but unquestionably the golden eagle is worthy of preservation, and I should doubt whether the numbers of ptarmigan in Scotland during the past fifty years have seriously diminished.

Ptarmigan average in weight about 1 pound 4 ounces—less than a red grouse.

CHAPTER SEVEN

Red Grouse [*Lagopus Scoticus*]

THE red grouse is indigenous to Great Britain and to no other country. It is a near relative of the willow grouse or ryper, and may perhaps be regarded as the insular form of that bird, which in our climate, milder than that of Norway and Sweden and the Swiss Alps, has ceased to change its plumage to white in the winter time, as do the willow grouse and ptarmigan.

But, like these two, it is always changing its plumage. No other group of birds goes through so many changes in the year as does the grouse, and what is the more confusing, in studying the red grouse's plumage, is that the moult of the cock and the hen takes place at different times, and not only that, but the moult may be deferred by disease. There is, in fact, no hard-and-fast rule by which you may be certain of finding either cock or hen at a particular time in a particular stage of plumage.

Before considering these stages or moults of plumage, we may further observe that there are no fewer than five types of plumage as regards colour, depending, generally speaking, on locality. Three of these are found in both sexes, two in the female only. They are thus classified by Mr. W. R. Ogilvie Grant, who has made an exhaustive study of many skins ranging over a long series of seasons.

Of these different types of plumage, the three which belong to male and female alike are the red form, the black form and the white-spotted form. The two which belong to the female only are the buff-spotted form and the buff-barred form. The five types, therefore, can be thus divided:

1. *The red form*. (*a*) *Cocks:* General colour, rufous-chestnut, without any white spots on the breast. Generally to be found in the western counties of Scotland, England and Wales. (*b*) *Hens:* The red form occurs in the same districts, but is much less common among hens.

2. *The black form*. Really black plumage is rare among cocks and rarer still among hens. The black feathers pre-

dominate, but are mingled and sprinkled with those of the red and white-spotted forms. Almost black birds have been obtained from Caithness, Sutherland, Inverness-shire, Perthshire, Stirlingshire, Dumbartonshire and Yorkshire.

3. *The white-spotted form.* This is typical of grouse on high ground and in the Highlands generally. The feathers of the breast and belly, and sometimes of the head and upper parts, are tipped with white. This white spotting may be found on birds belonging to the red or black form, or, in the females, to the buff-spotted form.

4. *The buff-spotted form.* This is the commonest type; the feathers of the upper parts are spotted with pale buff. Hens only.

5. *The buff-barred form.* This is typical of most hens in Ireland.

We come now to changes of plumage due to moulting.

The cock wears a summer-and-autumn plumage from the end of May to the beginning of October, and a winter-and-spring plumage from mid-October to mid-May.

The hen wears an autumn-and-winter plumage from August to March, and a spring-and-summer plumage from April till August.

It will be seen, then, that since the cocks and hens moult at different times, and the moult may be deferred by disease, and since the five forms of plumage more or less run into each other, it would be possible to set out a series of skins ranging from white-spotted buff to almost complete black. And as regards variations of colour, white or partially white grouse, although uncommon, have been often recorded, while cream-coloured, cream-brown and pale brown birds are occasionally shot.

Grouse belong to the northern and western counties of Great Britain and Ireland. There are none in the Shetlands, but from the Orkneys down to Yorkshire, Derbyshire and Shropshire in England, to Montgomeryshire in Wales, and in Ireland from Antrim to Kerry, they are to be found wherever there is heather and hill. They have also been introduced, in the form of birds netted in Dumfries-shire and elsewhere and sold to persons who doubtless did not realize how they were obtained by their vendor, to Exmoor and Dartmoor, where, although a good many nests every year are trampled by animals, they survive in fair numbers. They have also been introduced to the heather of Norfolk and Suffolk, but they need high ground, and have died out.

The staple food of the red grouse is heather—the green shoots of *Calluna vulgaris*, the common ling. This they eat during every month of the year. But there is a time of the year when they take to berries, and there are many other plants whose leaves or seed provide them with food. At different times of the year the following would figure in the contents of their crops:

1. Heather or ling (*Calluna vulgaris*). Grouse eat the shoots, flowers and seed.
2. Bell-heather (*Erica cinerea*). The leaves are bitter, and grouse eat only the flowers.
3. Cross-leaved heather (*Erica tetralix*). Grouse eat only the flowers.
4. Blaeberry (*Vaccinium myrtillus*). Known in England as whortleberry or bilberry, or by country people as "whorts" or "hurts." Grouse eat the buds, flower stems, flowers and berries. In August a grouse will cram himself with blaeberries.
5. Cranberry (*Vaccinium vitis-idæa*). Grouse eat the berries. This is the Scottish cranberry.
6. The English cranberry (*Vaccinium oxycoccos*). This plant is not common in Scotland.
7. Bearberry (*Arctostaphylos uva-ursi*). This belongs to high, stony ground. Grouse eat the red berries, and also the pink clusters of flowers, which first appear in June, but which you will find growing with the berries in August.
8. Crowberry or crakeberry (*Empetrum nigrum*). The plant is heath-like, and bears black, shining berries. Grouse eat the shoots, leaf buds and berries.
9. Cloudberry (*Rubus chamæmorus*). A trailing plant with fruit like a yellow bramble. *Chamæmorus* means "ground-mulberry." Grouse eat the berries and young leaves.
10. Bog myrtle (*Myrica gale*). In England sometimes called Sweet Gale. Grouse occasionally eat the buds in winter.
11. Creeping willow (*Salix repens*). A low-growing shrub with silky white leaves of which grouse, like ryper, are very fond.
12. Cottongrass (*Eriophorum polystachion*). This is a familiar

sight of marshy ground in winter, with its wavy cottony seed-tufts, but the grouse eat the flower in spring.

13. Sorrel (*Rumex acetosella*). Common on the fringe of the moor. Grouse eat the seeds.

14. Field wood rush (*Luzula campestris*). This rush has broad grass-like leaves edged with silky hair. Grouse eat the flowers and seed heads.

15. Heath rush (*Juncus squarrosus*). This grows in dry places, and grouse eat the flowers and seed heads.

There are many other plants which come into grouse diet. Young grouse have been known to thrive on the heads of sprouting bracken. Clover, bedstraw and many seeds, such as those of chickweed and knotgrass, are eaten by them. In *The Grouse in Health and in Disease* the late E. A. Wilson and A. S. Leslie collected data from the crops of birds examined through the whole of two years, which gave the following percentages as regards the proportions of food in the dietary.

Month.	Main Food.	Percentage.	Remainder.	Percentage.
January	*Calluna* shoots	64	Mainly *Calluna* seed-heads	27
February	,, ,,	75	Stalks and buds of blaeberry; leaves of crowberry	—
March	,, ,,	97	Stalks and buds of blaeberry	—
April	,, ,,	93	Various	—
May	,, ,,	82	,,	—
June	,, ,,	82	,,	—
July	,, ,,	53	,,	—
August	,, ,,	60	Various and *Calluna* flowers	—
September	,, ,,	63	Various and *Calluna* flowers	16
October	,, ,,	42	Various and *Calluna* flowers	30
November	,, ,,	39	Various and *Calluna* flowers and seedheads	33
December	,, ,,	60	Various and *Calluna* seedheads	27

It will seem from the above table that the percentage of food derived directly from heather varies from 97 per cent.

in the leanest month of the year, to 53 per cent. when there is a supply of berries. It is easy to understand from the study of these figures that a constant supply of young heather shoots is an absolute necessity for the health of grouse, and that it is in years when the supply of heather is scanty—as it must be when snow lies late on the hill, or when the blossom is poor and the seed does not ripen, as happens in a rainy and sunless summer and autumn—that grouse succumb to what has been called for many years by the simple name of "disease," which in other words is the consequence of starvation.

For a long time this problem of disease was studied without its cause being understood. It was not until 1905, when a Committee of Inquiry was appointed to investigate the subject of "Grouse Disease," that a real step forward to knowledge was taken. Up to that date individual research had merely resulted in theory. But the Committee, after years of painstaking work and exhaustive examination of evidence, were able in 1911 to publish the report of their work in that remarkable monograph—the best ever devoted to the life-history of a single bird—*The Grouse in Health and in Disease.*

This book contains an immense amount of information of value to the owners and tenants of grouse moors. But the peak of the achievement of the Committee was that they were able to give to the public an exact analysis of the diseases to which grouse are liable, and to point the way at least to possibilities of remedy.

Grouse, like other game birds, die from many different causes. They may be shot, or trapped, or poisoned; or they may die from natural causes, such as weakness of hens during sitting, or egg-binding, and so on. But the chief diseases which kill grouse are two—coccidiosis and strongylosis.

Coccidiosis is a disease which attacks other creatures besides grouse. It occurs with pheasants, poultry, pigeons, turkeys, canaries, rabbits and probably many wild birds. It is caused by a parasite, *Eimeria* (or *Coccidium*) *avium,* which finds its way into the alimentary canal of young grouse and destroys the membrane, so that the bird cannot get nourishment from its food and suffers from acute diarrhœa. The parasite is taken up by the bird in its food or water, and infection is spread by the birds' droppings. These in turn may contaminate moisture which other grouse swallow with their food, or they may dry in the sun so that the spores are spread by wind. Of this wind-carried form of infection we know little, but it probably accounts for coccidiosis attacking rearing fields of pheasants, for instance, supposed hitherto to be clean and healthy.

And with grouse coccidiosis must be a hopelessly baffling disease to the gamekeeper. It is an ailment mainly confined to young birds; it would seem that the stronger vitality of the adult grouse enables it to throw off the infection. But when it attacks young grouse the keeper's task is hopeless. He does not know, to begin with, whether the young broods have become victims or not. He can only decide the question when he finds his coveys small or absent in the months that follow the nesting season. If the chicks have died, he will never know it from finding their dead bodies; such little creatures would be invisible in the heather. All he can do is to discover later on what must have happened.

It is different with the other disease, strongylosis. Here the evidence of infection and death is only too patent. Dead and dying birds strew the moor. In a year of disease a moor may be emptied of its stock.

Here the story of infection, and the means by which it is carried, are exactly known. All grouse, even the healthiest, carry in their intestines small numbers of parasitic threadworm, *Trichostrongylus pergracilis*. These, so long as the grouse is strong and well-fed, do no harm. The bird throws off the infection. But if for any reason the stamina of the bird is weakened, the threadworms develop an unendurable attack, the intestines, particularly the two blind cæca, become inflamed, the grouse cannot digest its food, becomes weaker, and dies.

This is the life-history of the strongyle. Its larva, hatched out from the droppings of the grouse, climbs to the green tip of a young shoot of heather. The grouse bites off the tip of the shoot and swallows the strongyle, which passes into the cæca. Here the strongyle grows to its adult stage and pairs, and the female worm lays her eggs in the cæca. These eggs pass out with the bird's droppings, and from the egg the larva hatches out, to climb in its turn to another heather tip and so begin the life cycle again.

Then what happens in a "year of disease"? To understand that—we cannot claim yet to understand the whole story of cause and consequence, but to arrive at the main process—we must find more than one determining factor. In the first place, the larva of *Trichostrongylus pergracilis* needs moisture to enable it to climb to the tip of the heather shoot. It is a tiny creature of ·36 mm. or say one-hundredth of an inch in length when it is hatched, and it wriggles up heather stems when they are wet. When it reaches the tip of the shoot, it goes through a curious process of drying or encystment which enables it to lie for an indefinite period of dormancy or, so to speak, expectation—it waits, in fact, for the swallowing by the grouse. In this stage it cannot be killed by moderate drought or by extreme cold, as experiments have proved. A plant of heather with threadworms on the tips of the shoots has been sealed up in a box for a month, and at the end of the month when the shoots were dipped in water numbers of the larvæ were found wriggling and active. Another experiment was tried with heather tips frozen into a solid block of ice, which was placed for a week in one of the cold storage chambers of the Albert Docks, and when they were thawed out, the larvæ were as lively as ever.

Prolonged drought, however, does destroy the strongyle. Hot sun will kill the eggs in the droppings, and heat and drought for any lengthy period destroy the larvæ on the heather shoots. A keeper, therefore, knowing that cold and wet favour the life of the strongyle, will try to assist Nature by draining his moor so as to leave as little damp ground and as little stagnant water as possible. Also, knowing that the health of the grouse is dependent upon a full supply of young green heather, he will endeavour to increase the supply to the greatest extent in his power by burning as large an area of old heather as he can manage during the period available.

That is a period which is limited in Scotland by statute. Heather may be legally burned in Scotland only between October 1st and April 15th, though in exceptional circumstances or on ground above 1,500 feet the latter date may be extended to April 30th or May 15th. But in practice only a part of this legal period is actually used for the work. You cannot burn heather in snow or rain, and it is seldom dry enough to fire until February—much more often March. Salmon fishing in Scotland opens on the Tay early in January and on the Dee and most other rivers on February 11th, and I doubt whether many fishermen in Perthshire or Aberdeenshire in the opening days of the season have seen the hills sparkling in the dusk, as you may see them in the later weeks when the keepers have been lucky enough to get the drought and the wind they want for burning.

It is a curious fact that this need of the grouse for young green heather was only discovered by accident. A hundred years ago the hills of Scotland were grazed by sheep. That was the chief use to which the heather was put, and as it was necessary for the sheep to have young green heather which could only be obtained by burning the old heather in rotation, there were clauses inserted in the leases granted to graziers requiring them to burn one-tenth of the heather on the moor every year. They did this more or less regularly, and to get through the work as quickly as possible, burned the heather in large patches, here and there the side of a hill. So the years went on, and as for the grouse shooting, that was done by Scotsmen on the spot, or by casual visitors such as Colonel Peter Hawker, travelling up from England to see what sport Scotland could give them. There was no regular grouse-shooting season to attract Englishmen, who waited for their partridges in September.

Then came two changes. One was the possibility of travel which came with the railways. It became easy to reach Scotland from the south. The other was the introduction of breech-loading guns. Lang in 1853—strange that it should have been the year in which Hawker died!—gave the shooting world the opportunity of shooting for the first time without ramrods and powder flasks, and the consequence was that more guns were made and more Englishmen used them.

That was the beginning of the era of grouse moors. Owners of moorland found new tenants, who could afford to pay more to shoot grouse than the farmers could afford for grazing sheep. Gamekeepers were brought to the moors and the shepherds could no longer do as they chose. They had burned the heather over large stretches of the hills; now they were stopped from burning it, because the grouse-shooters found that it carried grouse. That did not matter at first, for there was plenty of young green heather where the hills had been burned. But after a time the consequences became plain and serious.

There was no food for the sheep, so here and there the farmers took up the shooting rights as well as the grazing rights, and began to burn as before. Still the moor owners or tenants continued their policy of not burning, and just as the food had gone short for the sheep, so it went short for grouse. They began to die—of disease, it was thought then, of starvation it was proved later. In the 'sixties the supply of grouse food on the unburned moors became less and less, and in 1872 and 1873 the moors were swept as if it had been by the plague.

Still, on the moors where the shepherds had started burning again grouse did not die. It was the young green heather, then, it was decided, that was needed just as much by grouse as by sheep. So the moor owners and tenants began to burn again. But their gamekeepers could not catch up with the work. The moor owners, when they began to burn again, burned only in patches. They did not fire hillsides as the shepherds had done, and there was still too much long heather. And there is still too much long heather today. When the Grouse Disease Inquiry Committee made their report—that is, when *The Grouse in Health and in Disease* was published—they recommended for grouse moors a fifteen-year rotation of burning; that is to say, that one-fifteenth of the area of heather should be burned every year. If it had been possible to begin this rotation then and there and to keep it up, all would have been well and would be so today. But on how many moors is such a rotation possible? Think what it means. To begin with, there is on almost any moor of any considerable size a large amount of heather which is almost unburnable. Really old heather—stick heather—can only be burned in the driest weather, and even then needs skilled watching, for if the fire really gets hold of the plants, it may get down into the peat and so creep along underground, possibly over the march or into ground carrying good young heather. Again, apart altogether from the possibility of burning old stick heather—of catching up with the neglect of past seasons, that is—there are the limitations of labour and time. What is the area which a keeper with men to help him can burn in an ordinary spring? The Grouse Disease Inquiry Committee were at pains to gather statistics. This was their conclusion:

"Speaking generally, after a careful investigation of east and west coast conditions, of high and low moors, a good spring burning season will give an average of ten whole days or twenty half days on which the hill can be fired. Taking into consideration dry and windy weather when the fire goes well but requires great control, and wetter conditions or less wind when the fire does not 'run' so fast and may be managed by a couple of men, it may be calculated that on an average each keeper, dividing his gang to the best advantage (each gang consisting of not less than two parties), will not burn more than thirty, or at the very outside forty, patches or strips in a full working day. That is to say, if the small patch or narrow strip method of burning is followed (*i.e.*, burning in areas of from one-eighth to half an acre), the two keepers and their parties will burn 20 acres a day, or a total of 200 acres of the moor in a year."

This is the Committee's calculation for a moor of say 6,000 acres in England or 10,000 acres in Scotland. It will be seen that of the English moor one-thirtieth of the area is burned, and of the Scottish moor one-fiftieth. This means a thirty-year rotation in the one case and a fifty-year rotation in the other.

That is to say, the evidence before the Committee showed that at the time when they made their report it was thought sufficient by the landlord to provide his two keepers with six or eight extra hands to burn the moor, and the landlord supposed that the moor was being sufficiently well burned. Of course, it was not.

What is the remedy, then? Obviously, more labour. The late Lord Lovat, Chairman of the Committee, and acknowledged as the first authority on questions of moor management, considered that, in the case of a badly burned moor of 4,000 acres on which it was to be attempted to establish a twenty-year rotation, the aim should be to try to burn 300 acres per year, in order to make allowance for bad burning seasons; and for this he allotted three keepers (watchers to count as keepers), each in charge of two parties of two or three men—that is, a total of from fifteen to twenty burners—and with that supply of labour he considered that it might be possible to get the work done. The burners would have to fire "twenty patches of 1 to 5 acres, say a total area of 50 acres; 300 patches of from one-fourth of an acre to 1 acre, making say 150 acres; 200 patches of from one-fourth to one-tenth of an acre, say 50 acres—*i.e.*, about 500 burns with a total of between 250 and 300 acres."

Lord Lovat then calculated that there might be an average of four parties burning a day (for on very dry or windy days the keepers might have to use all the men in their employ as one party), and that it would then require about ten days or twenty half days to get through the work, with each party burning an average of fourteen patches a day. This, he writes, "is a fair statement of what ought to be done on a 4,000-acre moor," and he adds the significant comment that "it probably exceeds by a very considerable amount what is done on many moors of double that size."

All this is evidence of two facts: one, that a plentiful supply of young green heather is essential to the health of grouse; the other, that under modern conditions, when moors are no longer burned as the graziers burned them a hundred years ago, it is a certainty that there will be recurring periods when the supply of young heather on some, perhaps many, of the moors in Scotland will be insufficient for the stock of grouse carried, that on those moors the grouse will be underfed, and that this semi-starvation will result from time to time in what up to a few years ago was vaguely called "disease."

Besides under-burning, there is a further threat to the heather supply of grouse moors. On certain moors—an unfortunately large number—there are to be seen plants or patches of heather which from a distance look to be of a foxy-red colour, but which if closely examined will be found to have had their young green shoots gnawed to the stalk. Keepers used to call this "frosted" heather, and would tell you that it was due to frost and bitter winds, but they were wrong. It is true that heather can be killed by frost. I remember nothing more dismal than the sight of a certain stretch of high ground on a moor in Inverness-shire—it carries the name Ballacrochan, which is Pall-a'-chrocain, where MacQueen killed the last wolf in Scotland—on which acres of heather had been killed down to grey and useless fibre by the frost of February, 1929. But these isolated patches of rusty heather have not been frosted. They have been eaten by the heather beetle, *Lochmæa suturalis*.

This is an insect of which we do not know as much as moor owners would like to learn. The beetle itself is a small oval-shaped creature rather less than a quarter of an inch in length, of a pale olive-brown colour with darker markings on the thorax. Its life-history is as follows: The beetles appear on the wing in the early spring, the date varying according to the weather. They have been hibernating in the soil at the roots of the heather. They pair, and the eggs are laid in sphagnum moss, where the change takes place to the larva stage. The larvæ crawl to the stalks of the heather, where they feed upon the young green shoots. When they are full fed, they crawl down the heather stalks and bury themselves in the moss and soil at the root of the plant, where they pass into the pupa stage. This is in August and September, and the perfect insect, the beetle, emerges only to seek its hibernating quarters in October, in the soil among the roots of the heather plant. In these quarters the beetle sleeps until the warmth of the spring sun sends it again on the wing.

Obviously this cycle of life makes the beetle an exceptionally difficult enemy. So far as our knowledge goes at present, there is no means of destroying it except by burning, and burning the heather can only be effective when the larva is feeding on the heather shoots. This is in spring and summer when there are grouse with young coveys in the heather. Also the heather is green and sappy, and would not burn unless soaked in paraffin; and in any case, in Scotland it is illegal to burn it at that time of year. So that to be sure of dealing with the pest the moor owner must first get the law altered, to enable him to begin tackling the task; he must then get his keepers out on the moor and select the plants which are to be burned and burn those only. It is a more than awkward problem.

But the heather beetle and the question of food supply which it brings with it are local. There are large areas on which *Lochmæa suturalis* is never seen. Argyllshire is the county chiefly affected, and even there it would be hard to assert that the beetle has seriously affected the health of grouse, though it has unquestionably diminished the food supply. The main fact that emerges from the whole welter of statistics of grouse population and the management of heather for food is that we do not know all that there is to be known, and there are factors which tend to the outbreak of disease and the consequent thinning of the grouse's numbers which remain obscure. We know that grouse must have heather, but there are occasions when they seem to have, or to have had, all the heather they could want, and yet when they show the symptoms of ailing and disease. That was especially noticeable in the summer and early autumn of 1933, when the heather supply of the past twelve months had been all that could be desired, and when there was a large stock of healthy grouse, but also among the stock a certain proportion of diseased or pining birds. I have never heard any convincing theory for the riddles set to moor owners in that season.

Weather, of course, governs many conditions in the life of grouse. The birds pair early, perhaps as early as January, and snow and hard weather may delay pairing for weeks. Courtship is an amusing business to watch; there are no official battlegrounds, so to speak, with the red grouse as there are with the black, but the cocks like to show off to their hens, and become so wrapt up in their performance that they are oblivious to their surroundings. You can get up to within a few feet of a cock grouse displaying his strength and beauty to his hen, which he does by making short flights straight up into the air and down again. Nesting begins in April, though grouse eggs are often found in March, and the full clutch is as a rule complete at the beginning of May, when the hen goes down upon her eggs. The nest is little more than a scrape in the ground, lined with a few bents, and the number of eggs, which are creamy-buff blotched by chestnut, ranges from four to twelve or even more. Seven would perhaps be an average in a fair year, eight in a good. Incubation lasts twenty-four days, so that in a season of good weather there are young chicks in the heather in June. But if the weather in May is inclement—and there are many records of deep snow falling late in the month—many nests are lost. A hen grouse will sit on her eggs even during heavy snow, but she may have her nest in a drift, or she may leave it for food and be unable to find it again. May is the dangerous month, for snow in Scotland and for rain and flood in England.

Young grouse are difficult to watch in their early stages, so that less is known about their very young days than naturalists would welcome. Gamekeepers do not like to disturb them on the moor, and one of the best accounts of their habits shortly after being hatched out that I have read is in the form of question and answer in an article in an early issue of the *Gamekeeper*, contributed by a keeper who had watched young chicks reared in captivity. He had found that they would try to pull heather as soon as they could run about, but that they were three days old before they were strong enough to pull much. Two or three other interesting observations he made of the grouse he reared, one of which was that in the presence of danger—say a hawk overhead—"they utter a quiet noise sufficiently loud for the rest to hear at 20 yards away, and as a rule they race to the nearest shelter to hide, although some squat close to the ground." As regards plumage, they get their black tails "about the age of six weeks, sometimes a little earlier, and the tail is full-grown at nine or ten weeks old." Young grouse he had seen play at games. "It is very amusing to watch them when they come across a bare spot. They run round and bow their heads somewhat similar to people enjoying a Scotch reel."

Besides heather and their other foods—and as regards the need of grouse for heather, there have been known instances when grouse have existed with their staple food in the form of bracken—grouse need grit to help them digest what they eat. They find this on the moor in the shape of quartz grit and felspar, with smaller quantities of tiny fragments of such rocks as granite and gneiss. Young grouse begin pecking about for grit within two or three days of being hatched, and the grit which grouse take into their gizzards remains there a considerable time, so that the larger grits in an old bird's gizzard become smooth and polished, a few of the smaller grits with sand and so on being ejected daily with the droppings. This means, of course, that grouse need a constant supply of grit, to be taken in with their food day by day.

But it does not mean, as some writers have argued, that if the grouse is deprived of grit supply, even for a considerable period, the grouse will die. A rather curious experiment was tried in grit starvation of a grouse by one of the pathologists who contributed to the statistics of that admirable work, *The Grouse in Health and in Disease.* Two healthy cock grouse, A and B, the one two years old and weighing 25 ounces, and the other four months old and weighing 14¾ ounces, were penned and deprived of grit. The older bird, A, survived thirty-five days of this treatment, and then, weighing 22½ ounces, was released. The other bird, B, on the sixteenth day of the experiment, had increased its weight to 15¼ ounces. And this is the diary of the last few days:

1908.	Weight in oz.	
October 1st	15¼	Two small grits were passed. Gave red cranberries, a numbered quantity, which were not eaten, with the dari, rice, heather, and blaeberry plants.
,, 2nd	15	Five grits were passed.
,, 3rd	15¼	Two grits were passed. Gave castor oil.
,, 4th	14	Three grits were passed. No more grits than usual, though the motions were very loose, but cæcal and ileal, in consequence of the castor oil. The bird was weak and unwilling to move. Coccidian spores passed in large numbers.
,, 5th	14	Seven grits were passed.
,, 6th	12½	Six grits were passed.
,, 7th	12	After death. Three grits were passed.

And this is the experimenter's comment:

"This bird had therefore lost 2¾ ounces of weight in exactly twenty-one days, and had then died, partly perhaps of coccidiosis, and partly of the result of grit starvation."

Might not this be another version of the story: "This bird had therefore lost 3¼ ounces of weight in exactly four days, and died without doubt in consequence of a dose of castor oil"?

Do grouse migrate? The question is often asked, and whenever it is answered, I think that part of the reply should be that "migrate" is the wrong word. Grouse cannot be said to migrate in the sense in which birds such as swallows or fieldfares migrate, nor do they take part in the quasi-tidal movements which affect many of our resident birds, which change their quarters from north to south and *vice versa* with the changing seasons. But they are undoubtedly affected by periodic movements, often difficult to explain, and we have at present no great store of knowledge on which to draw for statistics or inference. In 1921 the *Field* obtained from a large number of owners and tenants of grouse moors in Scotland detailed information as to all the movements of their stock or the grouse on neighbouring moors which they had been able to trace, but it was difficult to frame any kind of general law of travel. If there was any marked tendency in the direction of the different movements chronicled, it was a certain shifting of population along lines running north-east and south-west, which is the main line of the Scottish mountain ranges and glens. But there was no evidence bearing on the strange sudden movements which occasionally empty whole districts, and which a year or two later fill them again, with no apparent reason. This happened, for instance, in that strange year 1913, when the grouse on the moors of the Border Counties left them, and could not be traced elsewhere; and again in 1915, when the same moors were filled again with grouse—from where?

Nor could the information available by the inquiry settle the question which is so often asked on Scottish moors when the ground is occupied within a week or so by birds which the keeper, because of their colour or size—and also quantity—knows are not his. This happens year after year with certain moors, and, as with the Border grouse of 1913 and 1915, the presence or absence of these travelling birds seems to be unnoticed elsewhere.

A certain amount of knowledge as to the movements of grouse has been and still can be obtained by ringing young birds on their native moor, at the stage when they can be found and flushed, but can only just fly. Such schemes have been set on foot more than once, but not as yet with any large addition to our knowledge. One such scheme, which was initiated in 1913 by Mr. H. F. Witherby, I have described with tabulated records in the Lonsdale Library volume on *Shooting*. I give here the results in brief. There could have been no year more unfortunate as regards date for starting on a scheme which had to be wide and continuous if it was to prove anything, and in the end, with records of "recoveries" becoming more and more difficult to obtain, the scheme was abandoned.

In all, in the two years 1913 and 1914, perhaps 2,000 young grouse were ringed—the exact number is not known. There were 234 "recoveries"—that is, birds which were shot and recorded as picked up at a particular spot, near or far from the place where they were ringed. Only twenty-eight of these were killed at a distance of more than a mile from where they were ringed.

Of the twenty-eight, seventeen were shot in the autumn of the year in which they had been ringed, and these had travelled distances varying from one and a half to sixteen miles. Eight were killed in the year following the spring in which they had been ringed, and these had flown from three to twenty miles away from their homes. One was shot two years after being ringed, five miles away; one came through three seasons, and was "recovered" fourteen miles away from the place of ringing; and one was picked up dead four years after ringing, having travelled five miles. All these distances were measured as the crow flies, and no doubt the birds must have flown longer distances, possibly in their wanderings to spots even further away from their homes.

Of the remaining 206 birds, 191 were shot the same year in which they were ringed, and fifteen the year following, on the same beat on which the parent bird had nested. From the evidence of the two years' experiments in ringing initiated by Mr. Witherby, then, it does not seem possible to argue that there is any definite or regular seasonal movement among grouse, but that there are individual birds which may be said to wander. There seems to be no evidence of ringed birds flying far from home as a covey.

Grouse vary in weight according to sex and season. The adult cock is as a rule heavier than the adult hen, throughout the whole year except the spring, when the hen, about to sit, is in better condition than the cock, who has found courtship more exacting than has his mate. In December, according to statistics compiled by pathologists for *The Grouse in Health and in Disease*, the adult cock's average weight is 24·22 ounces, and the adult hen's is 21·07 ounces, while in January the hen's average weight is 21·52 ounces, and she continues to accumulate flesh and fat until the time comes for her to go down on her eggs, when she will weigh as much as a heavy cock and may even turn the scale at 27 ounces. She needs this reserve on which to draw during the twenty-three days on which she sits, while the cock throughout February and March leads a quarrelsome life, eats little, and pays continual attention to his wife. In the strain of temper and love-making he drops in weight from 24 ounces in February to 21½ ounces in March.

Generally speaking, Yorkshire grouse are heavier than Scottish, and there are records of cocks weighing 2 pounds killed at Pateley Bridge and of 2 pounds 1 ounce at Broomhead, both in Yorkshire. There is a mythical and very dark old male grouse, said to have weighed 2 pounds 8 ounces shot in Co. Kerry.

CHAPTER EIGHT

THE COMMON PHEASANT [*Phasianus colchicus*]

I HAVE no need to describe the plumage of the common pheasant, for two reasons or more. In the first place, the common or dark-necked pheasants known to our forefathers are seldom to be seen, or seldom pure-bred. *Phasianus colchicus* has so often been crossed with the ring-neck, *Phasianus torquatus*, and with the Mongolian, *Phasianus mongolicus*, that the great majority of pheasants shot in the coverts of this country today show signs of inter-breeding, and they no longer wear a distinct plumage. Besides these two last, the common pheasant, or "black-neck," as the gamekeeper used to call him, has been crossed with the Japanese, *Phasianus versicolor*, and the Prince of Wales's, *Phasianus principalis*, and the plumage of those two birds, one of them with its greens and purples, and the other with its superb reds, asserts itself in later generations. It is a strange and arresting fact that all true pheasants (*Phasianus Reevesii*, Reeves's pheasant, with his long barred tail is excepted) inter-breed more or less freely. It would be easy in any year, given a sufficient stock of different species, to fill an English wood in August with a population of exquisite mongrels.

And of late years we have had an addition to the colours of our cocks and hens. It is a curious story, and perhaps worth telling at length, so far as I have been able to search out the facts. This is the history of the pheasant now widely known as the melanistic mutant:

In the summer and autumn of the year 1927 there appeared in English coverts a new phenomenon. Among the ordinary pheasants feeding in the rides or added to the bag were birds of a curious dark plumage, the hens brown like grouse, and the cocks gleaming with black-purple, black-green, and black-blue. Most gamekeepers and most shooting men had never seen such birds before. But they were turning up everywhere. It was like an eruption. What were they and where did they come from, and why did they suddenly appear?

The first answer given to those questions was fairly simple.

They were supposed to be the result of a cross between the ordinary black-neck, *Phasianus colchicus*, and the Japanese pheasant, *Phasianus versicolor*. In the mixed ancestry of the wood or the game farm the Japanese cock had somehow transmitted his characteristics, or some of them, to a numerous progeny, which was now making its appearance in different directions. That answer seemed to do well enough as regards plumage, but it left untouched the problem of why the dark birds were suddenly evident in such numbers. For Japanese cocks were no new importation. Most owners of coverts had been familiar, at all events in aviaries or illustrations, with the bird for years past.

Then came another explanation. This came from no less an authority than Lord Rothschild himself. The *Field* published, on August 9th, 1928, a coloured drawing of the pheasant by Mr. F. W. Frohawk, and Lord Rothschild summed up the solution of the problem:

"The pheasant figured on the plate is a mutation of the breed of mixed pheasants found today in our coverts and represents the semi-domestic mutants, the 'black-winged peafowl' (*Pavo cristatus* mut. *nigripennis* Sclat.) and the 'black-throated golden pheasant' (*Thaumalea picta* mut. *obscurus* Jemm.).

"This mutant of the common pheasant is a melanistic one, and, owing to its dark metallic coloration in the male, has been considered by some people as a result of crossing with the Japanese pheasant (*Phasianus versicolor*), but this is not the case. The melanistic mutants in cases where there is strong crossing with the *Versicolor* pheasant are rather different from those containing only *Colchicus colchicus* and *Colchicus torquatus* or *Colchicus mongolicus* blood. In the male mutant of the *Versicolor* crosses the breast is blue like the mutant of the brown-breasted races, but the back, rump, and wing coverts, also interscapulium, are deep metallic green, like the breast of *Versicolor*.

"All the hens I have seen have been heavily barred, deep brown, and much resembling a grouse in general appearance. Although melanistic mutations occur in many species and families of birds in a wild state, the three cases of the peafowl, golden pheasant and common pheasant have hitherto only been found in a domestic or semi-domestic state. The opposite albinistic mutation, known absurdly as the 'Bohemian pheasant,' in which the brown of the plumage in both sexes has become cream-coloured, on the other hand, occurs in a wild state in most races of *Phasianus colchicus*."

So matters changed. A demand arose for melanistic mutants. Game farmers got up special stocks of melanistic mutants—a "new sub-species, provisionally named *Phasianus tenebrosus*," and so on. The idea spread, and you heard the explanation of the sudden appearance of the dark pheasant wherever you went.

But the numbers? Why were there suddenly so many? That was not explained, and remained apparently inexplicable until the summer of 1931, when the whole story was strung together by a friend of mine, Mr. Charles Peel. He had undertaken at my request an inspection of game farms; he had had his own experience, rather different from that of other people, of game farms, and with certain facts at the back of his head set out to make investigation. And this is the story he was able to put together. It begins as far back as 1908.

In that year the late Mr. Charles Wright, of Bolton Castle, Bolton-by-Bowland in Yorkshire, bought 800 black-neck eggs from two farms. Among the chicks was one black hen. The keeper wrote to both farms, but could get no explanation. He mated this hen next year, and the offspring the following year, with a *Colchicus* cock from Wales, and the dark stock continued to increase. In 1914, when pheasants could no longer be fed in the ordinary way because of the War, the pens were opened and the birds roamed wild, but when the coverts were at last beaten through again, the black birds were still there.

In 1925 Mr. Charles Peel's brother obtained from his friend Major Wright, who had succeeded to the estate, about 100 eggs, 75 per cent. of which hatched out black. Next year, after mating with ordinary hens, he again had a large percentage of dark birds. And then came a strange turn in the story. On November 4th, 1926, a large number—80 to 100—of these dark birds were stolen from the coverts. Exactly what became of them is uncertain, but they were sold in various directions, and in the following spring eggs from these dark birds were on the market.

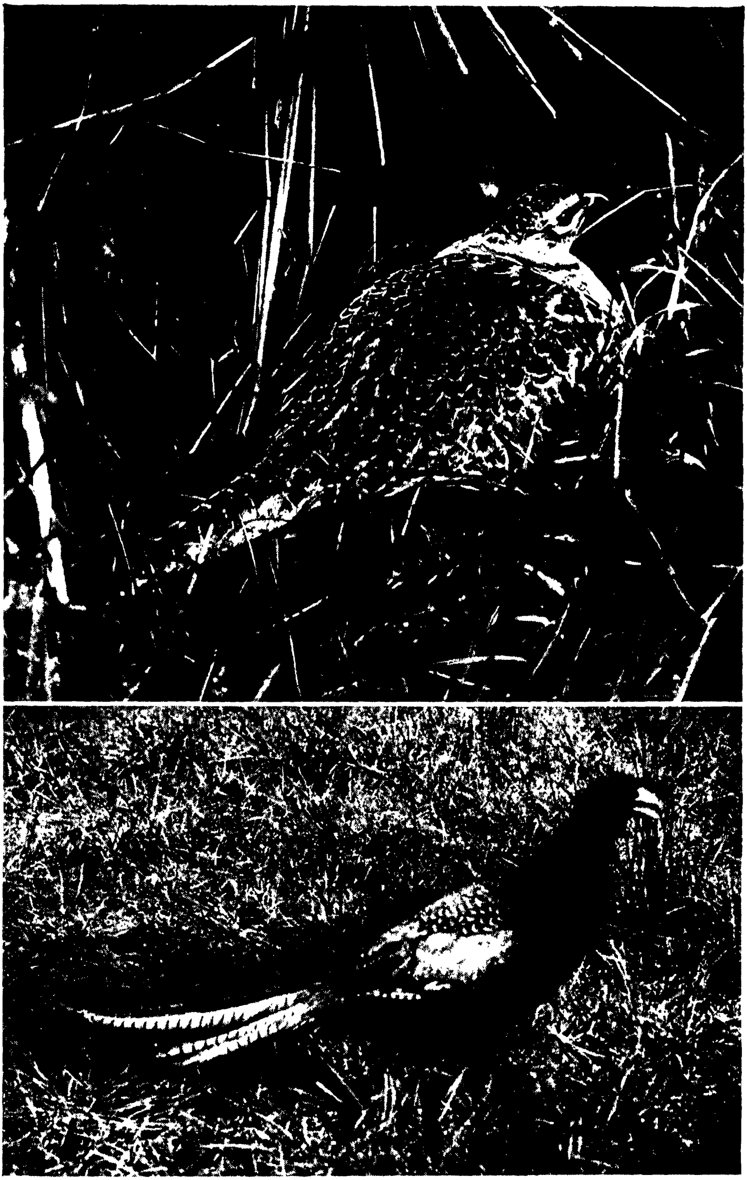
And meanwhile odd things were happening with some of the game farms. One game farmer in 1923 hatched out three strange chicks, a cock and two hens, whose plumage puzzled him until he discovered that his pens had been visited by a *Versicolor* cock, which had been turned down by a neighbour. This cock he subsequently found dead in one of his pens.

Another game farmer in 1923 bought a block of birds from an estate in East Sussex, among them five dark hens and several cocks. Eggs from these dark hens were included in the eggs sent out next year, and the chicks hatched from them created such a stir that the next year he advertised *Versicolor* crosses. A year or two later quite a large number of game farmers were advertising either these or melanistic mutants. So that there came about a strange position. Side by side game farmers were turning out what they believed to be *Versicolor* crosses, and what were identified as melanistic mutants, that is to say, two types of dark pheasants only to be distinguished by experts who could point to differences in the flank feathers, and the question arose—what would be the future of the pheasant most generally bred in English coverts? For in time crosses die out, while mutants breed true to type. It is a question which time only can settle, but which from the beginning seemed likely to be answered in one way. For whatever may be the preferences of owners of coverts or the recommendations of game farmers as to this or that breed of pheasants, you come back in the end to the rearing field, where the gamekeeper will be either successful or unsuccessful in bringing up chicks and putting them into covert. And gamekeepers are a conservative race of men.

And so we come to the natural history of the bird. Are pheasants indigenous to Great Britain? *Versicolor* and *Mongolicus* obviously are not, but what of *Colchicus*, the common pheasant? It is possible to contend that the bird is a native, for the remains of pheasant-like fowls have been found in prehistoric caves in France and elsewhere in modern Europe. But it is a sounder argument, I think, to ascribe the introduction of *Colchicus* to the Romans—not the soldiers who followed Cæsar's eagles, but the Romans of the occupation, who built villas and lined the Wall. For this reason, Marcus Terentius Varro, the great Roman writer on farming, compiled the third book of his treatise *Rerum Rusticarum* from material which he tells us he collected in the year 54 B.C.—that is, the year following the year of Cæsar's first landing. He devotes this book to the subject of *villatica pastio*, the feeding of live stock in the precincts of the villa. There are seventeen chapters in all, dealing in order with birds in general, fieldfares, peacocks, pigeons, turtle-doves, poultry, geese and ducks. Other chapters are devoted to hare-warrens, rabbits, wild boars, and bees; fishponds make a separate chapter, and there is a chapter each for dormice and snails. But there is not a word about pheasants. So that I think we may conclude that they were not at that date included in the subjects of *villatica pastio*, and did not belong to the villa as Cæsar knew it.

But they certainly came to the farm later. Another Roman writer, Rutilius Taurus Aemilianus Palladius, whose date is uncertain, but who probably wrote his book on country life, *De Re Rustica*, between A.D. 300 and 400, gives detailed directions for rearing pheasants, and shows as much knowledge of methods of keeping and breeding them as belongs to a modern gamekeeper. But even if Palladius had never written a line, we should know for certain that the owner of a Roman villa kept pheasants. Any traveller can get the evidence of his own eyes. I shall always remember the interest and delight with which I found myself on a day in March, 1930, gazing on the mosaics of the Musêe de Bardo, near Tunis, and realizing that what I was looking at had settled for ever the question whether, and if so when, the Roman *villatica pastio* provided for pheasants.

For here were mosaics taken from a country villa built at about A.D. 300 in the neighbourhood of Carthage, when Carthage, in the province of Africa, was the second Latin city in the Empire. And the largest mosaic pictured in detail the villa, built in the form of a square court, with the rooms of the master of the house in a storey of their own flanked by two high square turrets. In front you see the servants' quarters, the coach-house, a pigeon house and a barn. In the foreground are ducks and geese, and at the sides of the house and behind it an orchard with flowers, partridges, and two pheasants, one of them I think *Colchicus* and the other plainly *Torquatus*. So that by the beginning of the fourth century, between the time when Varro wrote his book *Rerum Rusticarum* and the date when Palladius wrote his *De Re Rustica*, pheasants had become part of the recognized stock of a rich Roman's villa and farm.



Plates 9—10

Top: HALF CONCEALED: SITTING PHEASANT.

Bottom: A GAMEKEEPER'S FAVOURITE: THE OLD ENGLISH BLACKNECK.

And this mosaic in the Musée de Bardo seems to me to dispose of the theory, or the contention, that the dark-necked pheasant is to be regarded as "the old English pheasant," and that the ring-necked is a later importation. Tegetmeier, who is generally regarded as a first-class authority, writes in his book *Pheasants: their Natural History and Practical Management*, that "formerly there was but one distinct species or race known in Europe, that which is named the *Phasianus colchicus*, from its having been received from the banks of the River Colchis in Asia Minor. This was followed by the ring-necked *Phasianus torquatus* from China." That may possibly be true, but Tegetmeier does not know when *Phasianus torquatus* was imported, for in his chapter devoted to the ring-necked, he merely remarks that "this species was introduced into England a great many years since, long before the time of Latham, who described it as having been turned out in preserves on many estates." Now, Latham wrote his *General Synopsis of Birds* between 1781 and 1787, so that if ring-necked pheasants were common in his day, why should they not be regarded as "the old English pheasant," just as truly as the dark-necked? In short, if the Romans introduced pheasants at all, why should they not have introduced dark-necked and ring-necked together, as you may see them in the farm mosaic in the Musée de Bardo?

We may argue further, then, I think, that in the days of the Roman occupation as in our own there were crosses between the black-necked pheasants and the ring-necked, and that the habits of both birds were the same then as they are now.

Pheasants are almost omnivorous. It may be convenient, even at the risk of making the page into a catalogue, to give a list of foods of which the pheasant is fond, and of other articles of diet which may occasionally be found in their crops. Pheasants in a wild state eat seeds, grain, fruit, berries, and roots. They particularly like the roots of the common silver weed (*Potentilla anserina*), and those of the pig-nut (*Bunium flexuosum*), and the tubers of the common buttercup (*Ranunculus bulbosus*) and the lesser celandine (*Ranunculus ficaria*), which they scratch out of the soil. They take the young shoots of common plants, grass, clover, cress, pimpernel, and any garden produce they can find. All wild berries attract them, and they will peck at any fruit lying on the ground. Seeds of all kinds form part of their food in the autumn, when they feed largely, too, on beech mast, acorns and occasionally even hazel nuts.

Of insects, pheasants will eat large quantities of wireworms, and are good friends in that way to the farmer; they also like the grubs of the crane-fly or daddy-long-legs, which do so much harm to lawns and pasture. They pick up small snails; they are very fond of the grub of the gall-flies, which lay their eggs on oak leaves and which in autumn, under their vegetable covering, form so familiar a carpet, known as spangles, under the trees. They are particularly fond of caterpillars, and wherever there is a large head of pheasants kept in the fields, you will find few butterflies of the species whose food-plant is low-growing—an obvious but sometimes unrecognized reason for the disappearance in certain localities of certain species which used to be common.

Of more unusual articles of diet, young field-mice are occasional examples, and so are small slow-worms and young adders. One of the oddest puzzles in my personal experience was the contents of a crop sent to me for analysis from a shooting in Lancashire. There were a large number of what looked like some sort of empty buds; they looked vaguely familiar to me, but I could not decide what they were, so I sent them to a botanist friend, who could not solve the riddle and sent some of them on to two scientific acquaintances, one of them a professor. Their opinions differed, and it was not until some time afterwards, when the keeper from whose ground the pheasant had come supplied the information that the bird had been feeding on marshy ground, that the answer to the puzzle was at last discovered. The "buds" were the sheaths of the fruiting stems of one of the equisetums.

Pheasants are naturally birds of the ground, and will always run rather than fly—a point of which the covert-owner planning the beating out of his woods takes advantage, for he knows that he can push them as far as he pleases on foot away from the place where they are fed—their home—and that when eventually he flushes them they will fly fast and far to get home again. The bird's flight is strong and swift, and is made with successive beatings of the short wings alternating with gliding with the wings expanded. The muscles of the breast and wings are strong, and so, for that matter, are the muscles of the legs; the bird can run at a tremendous pace when it pleases. Its feet, too, are muscular, and well fitted for scratching in soil or leaves.

Being ground birds, too, it is not always their habit to roost in trees. Often in Scotland, and in heather country in England, even where there are trees close at hand, pheasants prefer to sleep on the ground. Another use which they occasionally make of their legs is to swim. Tegetmeier gives instances of both old and young birds taking to the water, not because they were forced to do so, but of their own accord. There are even instances of wounded pheasants diving under water and coming up to the surface some distance away, in the manner of a duck.

Many letters and notes in the *Field* have recorded the crashing of pheasants in flight through plate-glass windows. This has happened by day and by night. In the daytime, no doubt the sky and trees are reflected in the glass, and the pheasant flies into what he supposes is a continuation of the landscape. But he has also been known to fly to a light; there is a pleasant old story of a stormy night in Wales, near Bangor, where six or seven villagers were sitting in the inn parlour with their tobacco and beer, when the window crashed, the light went out, and the men rushed into the street. A dead cock pheasant was found under the table.

All country-men know the sound of a pheasant "drumming." It is a sound of spring, one of the lustiest and happiest of the opening year. The cock, with the life of the young months in his blood, stands high on his feet, crows, and follows the crow with a rapid beating of his wings. When he "drums" in this way his actions are opposite in order to those of the rejoicing barnyard rooster, who beats his wings first and crows afterwards. Pheasants as a rule do not drum until the spring, and begin about March, but they seem occasionally to have a sudden knowledge of vigour in autumn, and I remember in one year a cock in my garden drumming time after time through the morning of Michaelmas Day.

Pheasants crow without drumming at all times of the year. They make a prodigious noise when they go up to roost, but that sound is less of a crow than a call—the gamekeepers call it "cocking." But they will crow at any time in answer to a call, or sometimes in response to something of which you, as listener, may not be aware at all. In the woods where I live in Surrey, pheasants crow whenever there is battle practice going on in the Channel; sometimes I can hear the guns and sometimes not, but the pheasants always know. They will crow in covert when there is shooting going on elsewhere near, and I have heard them crow at roost at night; I remember one year hearing them when I stood in the garden at midnight, listening to the church bells of the villages ringing in the New Year. And on another occasion I heard a large number of cocks crowing without being able to discover any reason why they should do so. I was visiting the North Oxfordshire game farm at Great Rollright, and the younger Mr. Harvey took me out to see the pheasants in one of his big open pens. All at once, as we were leaving the field, every cock pheasant on the farm began to crow at the top of his voice, and kept on crowing. I had never heard such a noise before, and Mr. Harvey told me that he had never before known it to happen on the farm.

Wild pheasants are early nesters, and it is not uncommon to find an egg in March. I have seen a brood of young pheasants able to fly in mid-May, and as the hen sits for twenty-four days, she must have begun to lay in mid-March. But April is the more usual month, and in a late season the first egg will not be laid, perhaps, until May. The cock bird, under the conditions of modern shooting, when there are more hens than cocks left in the woods, is of course polygamous, but I have had pairs of pheasants nesting in the garden, and certainly in two cases the cock did not leave his hen even when she was sitting. And there are many instances on record of cocks actually incubating eggs.

As for the hen pheasant, she has often been accused of being a bad mother. I believe her to be a good one. A hen pheasant will sit through the heaviest rain and allow herself to be nearly drowned before she will desert her eggs. If she has young chicks with her she will fly at any intruder to drive him off. I once had a tame hen pheasant which used to come and feed close by my chair as I sat writing in the garden, and make affectionate little mewing noises over the corn I put down for her. One day she disappeared, and I guessed that she had a nest. It was long before I found it, and when at last I made out where it must be, she had her newly hatched chicks with her, and she flew at me, beating me with her wings and pecking my legs. I was not the only person she attacked, for she drove off the gardener's spaniel and knocked a postman from his bicycle. And one day later on, when her chicks were bigger, I heard her cry out with rage in some long grass and realized that she was attacking some enemy: I went to look, and found her with one of her chicks dead, killed I thought by a weasel, and she had evidently scared the weasel. She was afraid of nothing in defence of her young, and I believe that she was typical of her sex.

Then how is it that she has been given a bad character? Partly, I think, through lack of careful observation by her accusers, partly because the world into which she introduces her chicks is full of dangers which she can neither prevent nor avoid. She takes her brood about with her to get food for them, and one of the little chicks may find itself the wrong side of some wire netting. Drought in a hot summer leaves wide cracks in the ground, into which chicks may fall. I have known nearly the whole of a newly hatched brood tumble into a deep trench cut by a farm labourer for a drain. There are stoats, weasels, owls, rats, cats; the wood is far fuller of enemies for the pheasant than the field is for the partridge. And so the mother loses perhaps half her brood or more. She cannot help it: man and nature together are too much for her.

As a rule, of course, she nests on the ground, where she scrapes a hollow and lines it with leaves or anything she finds at hand. There she lays ten or twelve eggs, which vary a good deal in colour from pale grey-green to olive-brown. Sometimes she and a partridge will lay in the same nest, in which case there may be a tragedy, as the partridge chicks will hatch out three days before the pheasant's, and she has been known to go off with the partridge chicks and leave her own eggs to go cold. Sometimes, too, she will choose an odd site for her nest—a squirrel's drey in a spruce, perhaps, or a wood-pigeon's nest, or the top of a haystack. The difficulty in these cases is getting the chicks to the ground, and though a pheasant mother has been known to take seven down safely, there are pretty sure to be others which fall and are killed.

Occasionally it happens that a hen pheasant changes her plumage partly to that of a cock, or even assumes cock plumage altogether, including the spurs. In these cases there has been damage to the sexual organs, possibly a stray shot pellet in the ovary. Such birds lose all the instincts of the female and the mother, and will never breed again. Keepers sometimes, a little unreasonably, call these birds mules.

I am not concerned here with the diseases which attack young pheasants on the rearing field—gapes, coccidiosis, favus, cramp, and that worst of all scourges, B.W.D.—bacillary white diarrhœa. But there are two possible causes of fatality which need further examination as regards wild pheasants. One is poisoning from eating the leaves of yew trees. These are known to be a danger to grazing animals, and there are various cases on record of horses and cattle having died from eating yew leaves, either from the tree itself or from hedge cuttings; so much so that actions for damage have been brought and sustained against owners of yews who have allowed the branches to hang over palings, or have thrown cuttings where cattle could get at them. On the other hand, cases have been known when animals have eaten yew leaves without apparent damage, and it seems possible that there may be some factor in the problem which is insufficiently understood. Experiments have been made which go to prove that taxine, which is the poisonous principle of the plant, exists in a much larger quantity in the leaves of the male than in those of the female yew, so that it may happen that only when the male yew's leaves have been swallowed the consequences have been serious, while the female's leaves, at all events in small quantities, are not harmful.

As regards symptoms, yew poisoning is readily detected, for the intestines become acutely inflamed, while otherwise the bird is in good condition. But why pheasants which have been well fed should choose to eat yew leaves at any time, while they neglect them at other times, is a question difficult to answer.

The other possibility of poisoning is a problem in dispute. Can pheasants be poisoned by picking up shot pellets? Many years ago—in the *Field* of February, 1876—a veterinary surgeon, Mr. J. Hinde Calvert, described the condition of a hen pheasant which had been brought to him for inspection. He found that its legs were partially paralyzed. A post-mortem examination showed that the gizzard contained thirteen leaden pellets, which had been gradually ground up with the food, so that there were traces of lead dissolved in the food and also in the blood near the heart. This at the time no doubt was accepted as conclusive.

But the presence of shot pellets in a pheasant's gizzard today would not necessarily be argued by pathologists to indicate certainty of lead poisoning. The late Dr. Hammond Smith, who in his time examined a very large number of pheasants for the *Field*, would never accept the theory that shot pellets would be likely to cause poisoning. He never came across a case of lead poisoning by shot, either in pheasants or grouse or partridges, though he frequently found pellets in their gizzards, and a friend of his, the late Sir J. Brigg, told him that he once poured the greater part of a charge of shot down a hen's throat, and it did her no harm. But this question of the possibility of lead poisoning turns, after all, on a question of date. In the old days shot was made of soft lead; today all shot is hardened.

Hammond Smith was a great authority on grit and the other hard substances necessary for the health of grouse and pheasants, in order to enable them to digest their food properly. He proved more than once, in his advice to the owners of pheasant coverts, that pheasants would desert coverts where there was no available supply of grit, and would remain in them if they were given grit in the shape of ground quartz or finely broken granite.

CHAPTER NINE

COMMON PARTRIDGE [*Perdix cinerea*]

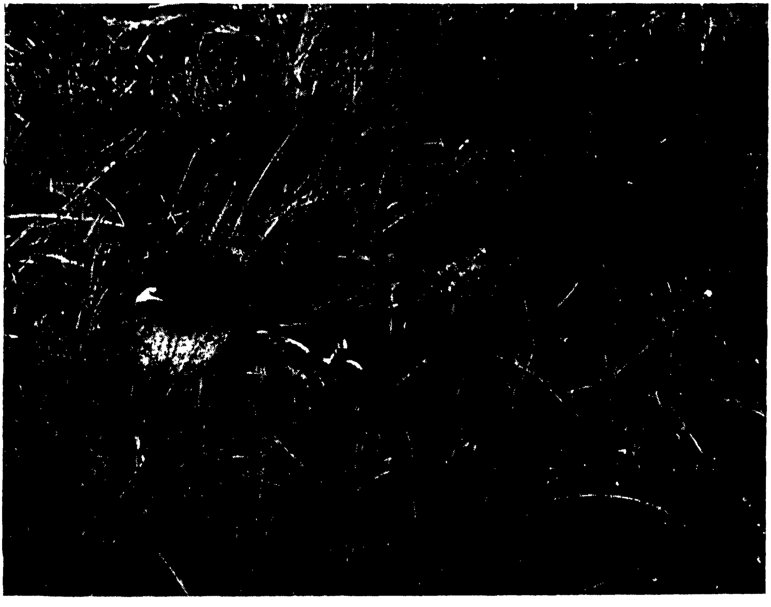
LET us take the plumage first, and begin with the main differences between the cock and the hen. Look first at the crown of the head of the cock. It is brown, with a few shaft-stripes of buff; the rest of the head and throat is bright brownish-red. The crown of the head of the hen is brown, and so are the back and sides of the neck. Look next at the median wing-coverts of the cock; they are mainly brown shading into grey, with thin wavy cross-bars of black. On the inner web there is a blotch of bright chestnut, and running the length of the feather is a pale buff shaft-stripe.

Compare these feathers with the median wing-coverts of the hen, and you will see that the hen's feathers are mainly black shading to grey, with narrow wavy buff cross-bars on each side of the shaft-stripe. Thirdly, look at the feathers of the breast. The cock has a more or less broad horseshoe patch of dark chestnut, while the hen's horseshoe is much less strongly marked, and is sometimes absent altogether.

I need not describe in detail the rest of the plumage of so familiar a bird. But there are variations which occur from time to time. The most striking in colour is the so-called mountain partridge, *Perdix montana*. This is really an example of erythrism, or tendency to red. The head and neck are bright red-buff, and most of the rest of the plumage is a rich chestnut, with the wing-coverts vermiculated with grey and black. In this variety the wing-coverts of the sexes are indistinguishable.

Another variety, of which I have seen some beautiful specimens, is mainly grey, tinged in parts with pale ochre, and the median wing-coverts of the hen are some of them black-barred with buff-brown. The grey plumage is vermiculated with black.

In a third class come various stages of plumage ranging from pale to albinism. These varieties merge one into another. And I have also seen partridges more or less conforming to



Plates 11—12

Top : GOING DOWN ON HER EGGS : COMMON PARTRIDGE.

Bottom : IN GROWING GRASS : A DANGEROUS SITUATION.

the ordinary type, but with the horseshoe on the breast black instead of dark chestnut.

Partridges pair early in the year, the date depending mainly on the weather. In a mild winter they are paired in January, a fact which has led to change in fashion during recent years, for it has become gradually more and more fully recognized that when you shoot partridges in January you are really killing off your stock for the breeding season. On many partridge manors today the order is that no partridges are to be shot after Christmas. But here, again, the weather must be taken into account. If partridges pair early in January, they will come together again into coveys if the weather hardens with a fall of snow. I well remember coming across five or six partridges in this way in a field where I had previously seen them paired. The snow was dry and powdery, and it was then for the first time that I noticed, when I walked up to the spot from which they had risen, the way in which a partridge rises from the ground. Each bird had left behind it the same trace in the snow—five long scratches or dents, spread like thin fingers on the surface, on each side of the spot from which it rose. When a partridge leaves the ground, the five longest primaries in each wing sweep the surface with the first beat of the wings.

Like many other birds, partridges are monogamous and pair for life—not that their married life is always long. They fall in love with each other much in the same way as do human beings, and you could not pair off a cock and hen with any certainty that they would take to one another. When paired they are most constant in their affection, the cock staying always by the hen, ready to drive off any intruding enemy.

The nest is a mere scrape in the ground, lined with grass-bents and leaves. Usually the site chosen is the tangled herbage of a hedge bank, or under low branching plants such as bramble. It is well hidden, and the hen so nearly matches her surroundings that it needs an experienced eye to find her quickly. Sometimes, however, she chooses to make her nest in a growing crop of grass, sainfoin or corn; and if she nests in a hayfield she is in serious danger when the crop is cut. Something can be done to protect her if a keeper walks ahead of the mower and watches the inside of the swathe before the horses take the machine over it; and the experiment has been tried of taking the machine into the middle of an uncut field, and gradually working a wider circle, outwards, in the hope of disturbing the sitting bird or the hen with her brood by the noise of the knives. But many nests and many partridge chicks, unhappily, fall every year victims to the necessary operations of the farm.

Although partridges pair early, at any date from January to March, they are not early nesters, and eggs are laid as a rule in May. A hen partridge goes down on her full clutch, which may number from ten to twenty, about the third or fourth week in May, and an average date for hatching out is mid-June. The eggs are pale olive-brown, though occasionally greenish-blue and even white, and as many as thirty-six have been found in one nest, doubtless laid by more than one bird.

When the hen is sitting, she gives off no scent. This is probably because she closes her wings down tight over her body; but when the eggs are on the point of chipping, she raises her body and fluffs her feathers, and it is then that her natural scent goes out to the nose of a questing fox or dog. More partridges are destroyed by foxes when the chicks are hatching out than at any other period of the nesting season.

But if all goes well, the mother partridge, partnered by the cock, takes her babies out into the growing crops. And then comes the peril of rain. A heavy storm of rain will so drench a field of grass that a covey of young partridges become too wet to be able to move, and die of cold and exposure. If the sun comes out after rain, the parents will take their chicks out on headlands and open spaces to dry in the warmth, and partridges have even been seen to take a covey of young birds into the cover of a farm shed, to avoid a drenching. But the last fortnight in June and the first week or ten days in July are the critical time. Many heads are shaken if there is a thunderstorm, as happens so often, in Ascot week; and the Eton and Harrow match at Lord's, which takes place in the second week in July, is the accepted date on which notes can be compared and more or less accurate guesses made, in view of the weather, as to the prospects of the season.

By mid-August young partridges should be coming to their full growth, though late nests will produce coveys of "cheepers," weaklings which should be spared the gun, well into

September. It is when the crops are cut in August that the gamekeeper can begin to count his coveys. If he is in charge of an important partridge beat, he will have made a map earlier in the season on which he will have marked the sites of as many nests as he can find—he will never find all—and he will be able to calculate how many broods his ground should hold. But he does not know what has happened in the growing corn until the wheat and oats and barley are carried, and before that pneumonia or gapes may have robbed him of his hoped-for stock. And there is another disease, only identified with certainty during recent years, which in years gone by was hardly more than suspected by the most observant of owners and gamekeepers of partridge ground. During the seasons 1931-33 many partridge shoots were ruined by this disease, which has had a curious history.

Years ago, say in the latter half of the last century, when the natural history of game birds came to be more and more closely studied, partridges were picked up dead or in poor condition, suffering from symptoms which were obscure and difficult to diagnose. Gamekeepers used to describe such birds as "going light," by which they meant that the birds lost weight and strength. But little was done to try to trace the cause of such ailments. It fell to the lot of the late Dr. H. Hammond Smith to make the first discovery. He held the position of pathologist to the *Field*, and in December, 1913, he described in that paper the results of his inquiry into the mortality of partridges which had been through his hands during the past season. He had examined 116 birds sent to him during the past twelve months, 83 of them old birds, and 33 of them young. Most of them had died of pneumonia, coccidiosis and enteritis. But 26 had died of an infection new to his experience. He had found them to be suffering from the infection of a minute strongyle worm akin to, but much smaller than, the *Trichostrongylus pergracilis*, which is the main factor in the mortality of grouse in years of disease. I well remember his excited interest when he called me into his laboratory to examine under the microscope the tiny parasites, almost invisible except under the lens, which he believed had been the cause of the obscure disease hitherto unidentified.

Then came the War, and Hammond Smith had other work to do. And after the War, before he could collect the further material which he needed, his health failed. He died in 1924, but he had laid the seed for the further investigation of a fascinating problem. The natural history of the strongyle that kills grouse was fully known, from the egg to the mating of the mature parents. It had been established that the strongyle was taken into the grouse's system with its natural food, the shoots and tips of green heather. But *Trichostrongylus pergracilis* was visible to the naked eye. How were you to inquire into, much less determine, the life cycle of a creature which, to all intents of the field naturalist, was invisible ?

The answer came in 1932, with the publication in book form of the Report of the *Country Life* Committee of Enquiry into the Diseases of Partridges. This Committee was formed in 1931, with Major Maurice Portal as Chairman, and Dr. W. E. Collinge as pathologist. The Committee's investigations covered a wide ground, but its main achievement was the establishment more or less in detail of the facts of the life cycle of the minute worm, named *Trichostrongylus tenuis*, which under certain conditions infects partridges as the *Trichostrongylus pergracilis* infects grouse. And the story of the discovery of the cycle is one of those simple trains of reasoning which, when laid before those who had puzzled over the problem, as I did, seems so obvious as to have left no other line of investigation thinkable. Yet there it was, and it had never occurred to me. The grouse swallows its strongyle with its food, and so becomes infected. So does the partridge. Of course.

Here is the story. It begins with the reading (I have often read it) of a passage on p. 232 of Vol. I of the Report of the Grouse Disease Inquiry Committee, describing the way in which the larvæ of *Trichostrongylus pergracilis* "after a brief period of development ascend the heather and can remain hidden in the crevices of the leaves, in a quiescent, invisible and living state for a prolonged period."

And the *Country Life* Report continues with the simple sentence: "With this information we commenced taking washes from various grasses, weeds, and clover."

So they found *Trichostrongylus tenuis*. The plants were washed and the washings microscopically examined, and the strongyle was present in large numbers, in particular on the meadow grass *Poa trivialis*, on various species of clover, on the common Salad Burnet (*Poterium sanguisorba*), Spurrey (*Spergula arvensis*), Stone (Heath) Bedstraw (*Galium saxatile*), and Silver-weed (*Potentilla anserina*).

The reasoning, then, follows that of the Grouse Disease Inquiry Committee. From the droppings of the partridge the larvæ of *Trichostrongylus tenuis* make their way up the damp stems of various plants, secreting themselves among the leaves, which are eaten by the partridges, causing inflammation of the intestine, and in turn being passed out again with the droppings. And, of course, the larger number of the stock of partridges on the ground, the greater the possibility of infection and the multiplication of the number of infected birds. The thing goes in a vicious circle, almost of geometrical progression.

Among other valuable pages in the *Country Life* Report is a list of the various foods found in the crops of the partridges sent to their pathologist for examination. Dr. Collinge found that of the total bulk of food consumed, "40·5 per cent. is animal matter, 23 per cent. of which consists of injurious insects, 3 per cent. of beneficial species, 4 per cent. of neutral species, 6·5 per cent. of earth-worms, and 4 per cent. of slugs." The remaining 59·5 per cent. is composed of 53·5 per cent. of leaves, fruits and seeds of weeds, grass and clover, 3·5 per cent. of grain, and 2·5 per cent. of miscellaneous vegetable matter.

Here is a classified list of animal and vegetable foods: Earth-worms; earwigs; many species of beetle; of moths, the Large Yellow Underwing (*Tryphæna pronuba*), the Turnip moth (*Agrotis segetum*), and the Heart and Dart (*Agrotis exclamationis*); various species of ants; snails; and the following plants—Common Sorrel (*Rumex acetosa*), Sheel Sorrel (*Rumex acetosella*), Spurrey (*Spergula arvensis*), Buttercup (*Ranunculus acris*), Clovers (*Trifolium repens*, *Trifolium pratense*, *Trifolium incarnatum*), Lady's Mantle (*Alchemilla arvensis*), Heath Bedstraw (*Galium saxatile*), Ribwort (*Plantago lanceolata*), Broad-leaved Plantain (*Plantago major*), Curled Dock (*Rumex crispus*), Knot Grass (*Polygonium aviculare*), Tufted Hairgrass (*Aira cæspitosa*), Rough Meadow-grass (*Poa trivialis*), Salad Burnet (*Poterium sanguisorba*), Silver-weed (*Potentilla anserina*).

We come now to a debated point in the natural history of partridges. How is their health affected by modern conditions of farming? Now that artificial manures have largely taken the place of farmyard dung, is the food supply available for the partridge stock on farm land decreased, and if so, with what consequences?

Two passages in the *Country Life* Report bear on this point. One is an extract from a letter from a Hampshire correspondent writing on the mortality of partridges on a particular estate: "This year the bulk of the dead birds picked up were on 30 acres of clover ley which had been heavily sheeped and grew a heavy crop of grass aftermath. There may be nothing in this, but these 30 acres have had no artificials at all."

The inference would seem to be that if the clover had been dressed with artificials, the strongyles would have been destroyed. This would coincide with an opinion expressed by the Committee in a summary of answers to their *questionnaire* on the subject of artificial manures:

"This cannot by any stretch of imagination be in any way beneficial to partridges, while dressings of some artificial manures, especially sulphate of ammonia and some potato-spraying mixtures, are extremely detrimental, and in some cases fatal. Even when the use of artificial manure does not supplant farmyard manure, it probably tends to neutralize the beneficial results of the latter on insect life, so necessary to the welfare of the young partridge."

And that opinion, I think, would be endorsed by nine out of ten, or more, owners of partridge land.

In 1933 Imperial Chemical Industries, with an energy and thoroughness characteristic of that immense organization, set out to make an examination, as complete as possible, of the conditions under which partridges live and thrive, or the reverse, in the changing conditions of the rural life of modern England. They leased from the Earl of Lytton his shooting estate at Knebworth, Herts, with a view to experimenting in various directions; they placed Captain H. B. Moser, well known as a pioneer in the breeding. But two seasons are not a sufficiently long period to afford time for thorough investigation of the questions involved, and we must wait other years for fuller knowledge.

In derivation the word "partridge" goes back to the name *perdix*, which is the same in Latin and Greek. The Old French is *perdrix*, and mediæval English *pertrich*, which is also spelt "ptyryche"; and it may be a mere coincidence, but I have always thought that the ultimate derivation of the bird's name was its own call—the "rusty key" of the partridge, as Tennyson writes of it. There could hardly be a better transcription in print of that familiar sound of English fields than "ptyryche."

The weight of a cock partridge is about 13 ounces; of a hen, 12 ounces. A bird of over 1 pound is exceptionally heavy, but the *Field* of October 31st, 1903, chronicles a partridge weighing 1 pound 7 ounces.

CHAPTER TEN

THE FRENCH PARTRIDGE [*Caccabis rufa*]

IT is perhaps unnecessary to describe the plumage of this handsome bird, which cannot be mistaken for any other in this country. It is enough to add to the name which heads this chapter the other name of "Red-leg"; to draw attention to the bright and varied colouring of the bird, with its broadly barred feathers, chestnut, white and black, on its sides and flanks, and its coral-red legs and beak; and to point out that the plumage and appearance of the sexes are the same, except that the male has knob-like excrescences on his legs, in the place of spurs, which are absent in the female.

Young French partridges in their September dress, while they are changing from their nestling to adult plumage, are sometimes mistaken for hybrids between red-leg and grey, but there is no known instance of these two species interbreeding. Varieties in plumage, however, occur occasionally. In the Natural History Museum in South Kensington there are several interesting skins. One is that of a male bird which was shot at Braintree in Essex on October 20th, 1908; the upper feathers are pale bluish-grey, the lower part of the breast is white, and the chestnut bars are absent from the sides and flanks, so that the general appearance is of a bird with blue-grey and white plumage, the gorget edged with black, and black and white bars on the flanks. There are two other curious specimens: one, a male, was shot at Higham in Kent on October 20th, 1914, and was sent to the Museum by Dr. Hammond Smith, then pathologist to the *Field*; the other was shot near Rochester (possibly a relation, since the locality is the same) on October 5th, 1915, and was given to the Museum by James Harting, then Natural History Editor of the *Field*. Both these birds are mainly dull claret-brown. A fourth variety, pure white, with pale coral pink legs, is a young bird sent from Swanmore, Hants, on August 6th, 1920, by Major Maurice Portal.

This species is called the French partridge from the fact that it was first introduced into this country from France. It is native to all the countries of south-western Europe. The date of its introduction was for a long time uncertain. Yarrell quotes a statement from Daniel's *Rural Sports* to the effect that several pairs were turned out "about Windsor" in the reign of Charles II, but he is vague as to their history, and apparently regards a later introduction, of about the date 1770, as the parent stock of the birds we see today. Fortunately we are able to fix with precision the date on which these foreign partridges were introduced into England. On March 19th, 1921, Lord Leicester sent to the *Field* copies of two letters which had been found in the Bibliothèque Nationale in Paris. The first of these, dated from London, October 9th, 1673, is directed by Charles Colbert, Marquis de Croisy, Ambassador from Louis XIV to Charles II, to Jacques de Saumary, Comte de la Corre, Grand Master of Waters and Forests, and Captain of the Castle of Chambord. In it the Marquis desires the Grand Master to supply Favennes de Mouchant, Gamekeeper to the King of England, with "*perdrix rouges, pour en peupler les parcs de Winsor et de Richmont.*" We may conclude, therefore, that it was in the late autumn of 1673 that French partridges were first put down at Windsor and Richmond, so that they have been naturalized in England now for more than 260 years. We may also guess that French partridges, as affording sport for the gun, had long been a subject of talk at Court in England. Samuel Pepys, on March 21st, 1766, writes in his Diary, recording a visit to the Duke of York, that "Sir Robert Long told us of the plenty of partridges in France, where he says the King of France and his company killed with their guns, in the plain de Versailles, 300 and odd partridges at one bout." What a pity that Pepys did not continue his Diary later than 1669! If he had, we might have heard what sport King Charles had at Windsor.

French partridges nest about the same time as the common partridge, and in the same kind of places—scrapes under brambles, in rough banks and so on. There may be from ten to eighteen eggs in the clutch, and they are handsomer than those of the common partridge, creamy-buff speckled with reddish and yellowish brown. Sometimes the hen waits an interval of two or three days between the laying of her eggs. One very interesting fact in regard to the young birds came to my notice in the summer of 1934. At Knebworth in Hertfordshire, on the ground leased to Imperial Chemical Industries by the Earl of Lytton, there were a number of broods of hand-reared partridges distributed with coops containing their foster-mothers on a wide stretch of park grass land. Among these broods there were common partridges, crosses between Hungarians and common partridges, pure Hungarians, and French partridges. And the young French partridges were the only broods that flew. I saw one brood take wing and fly for about 200 yards; I did not see that they had been disturbed, it was just as if they flew to amuse themselves. And yet, as everyone knows who shoots partridges, the adult birds are most unwilling to take wing, and will run long distances before the line of guns or beaters. For that reason, and also because they were supposed to be quarrelsome, they used to be disliked by keepers of the old fashions, who would pick up or even trample on the eggs in their nests. How well I remember, as a boy sitting in a schoolroom at home in Hertfordshire, a clutch of French partridge's eggs being brought in on a plate—I can hear the sound of them rolling on the china—just as they had been given to the cook by the gamekeeper! Today keepers have no word of complaint against the red-leg; they do not find him quarrelsome, and he is useful when they are driving, because he runs forward and splits up the coveys of the common bird. Also he flies straighter than his cousin, and there are guns who value him for that reason.

The call of the French partridge is different from that of the common partridge—perhaps "chuck-ara-kar" represents the sound fairly nearly. As to weight, the French partridge is the heavier. A cock weighs from 1 pound to 1 pound 2 ounces, and a hen rather lighter. In 1881 a French partridge was shot in Essex which weighed 1 pound 6 ounces; and in the same season another, the heaviest on record, was shot at Hanworth, Norfolk, and weighed 1 pound 9 ounces.

CHAPTER ELEVEN

QUAIL [*Coturnix communis*]

THIS bird presents a curious problem. It is a summer migrant, and is due to arrive in May and to breed at the end of the month or in June, like its near relation the common partridge. But of all summer migrants it is the most irregular. There are seasons when for some reason it is fairly common; 1893 was a good quail season, and so was 1899; but of recent years quails have been rare birds, and their scarcity is all the more disappointing in that there has lately seemed to be good reason for expecting their numbers to increase. One of the causes of the bird's temporary disappearance was supposed to be the excessive netting of quails which used to take place along the shores of the Mediterranean during the spring migration north from Africa; and since the French Government, with the help of the *Conseil Internationale de la Chasse*, some years ago obtained agreements from other Governments concerned to limit or to put an end to such netting along certain stretches of the coastline, it was hoped that the numbers of migrating quail which would be enabled to reach Europe would be greatly increased. The Comte d'Adix, Secretary to the *Conseil Internationale*, told me that in the spring of 1933, as a result of the nets being taken off, there had been a large influx of quails into the South of France, and that he hoped that in 1934 the tide of this migration would reach England. Unfortunately, it did not do so, and though it would seem reasonable to hope that after successive summers of encouragement we may expect that an increasing tide pouring into France may push its most northerly waves into our southern counties, we can only realize for the present that we are not much better off than we were.

It must be remembered that quail, before the Mediterranean netting became oppressive, were at no period constant in their numbers as migrants to England. If we turn to the Shooting Diaries of Colonel Peter Hawker, who kept a record of every day's sport with the gun—nearly all of it in Hampshire—from his sixteenth year until the year in which he died, 1853, we shall find that in all the fifty-one seasons through which he shot he killed only 58 quail. His best seasons were 1847, 8 quail; 1830, 7; 1802, 4; 1803, 4; 1810, 4; 1832, 4; 1852, 4. In each of the two seasons 1811 and 1814 he killed 3 quail; in 1806, 1815 and 1825 he killed 2 quail; there were eleven seasons in which he killed only 1 quail; and in twenty-eight seasons he did not shoot any quail at all. More, for there were long periods together when there were no quail. The seven seasons 1818 to 1824 were blank, and in the fourteen seasons 1833 to 1846 he bagged only 1 quail, in 1836. So that we may guess that the Colonel was not less gloomy in his contemplation of quail records than is the naturalist of today.

The quail is a delightful little bird to look at, very like a small partridge with a short tail. The nest is little more than a scrape or hollow, in rough grass or a standing crop, and the hen lays from seven to a dozen eggs, a little smaller than partridges', and rather more sharply pointed, of a creamy-yellow ground colour speckled or blotched with reddish-brown. When the chicks are hatched and fly with their parents they form not a covey, but, in proper sporting language, a bevy. I think that in view of Hawker's skill with the gun, and the fact that he shot but one quail in so many seasons, many of his shots must have been at single birds rising. Once when I was a schoolboy I caught in Sussex, close to a hedgerow, a single young quail in a butterfly net.

Plate 13

AT CLOSE QUARTERS: LANDRAIL RETURNING TO NEST.

CHAPTER TWELVE

LANDRAIL [*Crex pratensis*]

OTHER names for this summer migrant are the corncrake and the daker-hen. The latter is a northern name, and is "acre-hen" or "field-hen"—as vague an appellation as "water-hen" or "moor-hen." The Scandinavian equivalent is *ager höne*. "Corncrake" is more definite, the bird that crakes in the corn. Though here, again, we are in an earlier age than ours, when corn was broadcast and afforded as close a shelter as the hayfields and water-meadows in which we hear the landrail's creaking voice today. Corn sown in drills provides long alleys which the bird mistrusts, plain to view from end to end. And even in the meadow grasses the landrail is less common than it used to be—why, it is difficult to say, for there seems to be no particular cause for its disappearance. Bucknill, in his *Birds of Surrey*, says that in 1896 landrails were so numerous in the southern counties that he knew of several occasions on which five brace were bagged in a day's partridge shooting. There are many fields in Surrey today where landrails would not be shot if they were seen; but you may listen in those fields in the May dark—for the bird wakes by night as well as day—and hear no voice but the nightingale's.

It is a very distinct call, "crake-crake—crake-crake," and may be imitated by drawing a stick across the teeth of a comb. You may bring a landrail right across a hayfield to you, for all his shy habits, by imitating the call, and he will come to tackle his supposed rival. He is a bird of contradictory habits, too, in other ways, for if you flush him in September, in a field of clover or mustard, he rises and flies low and slowly, drops after a short distance, and cannot be flushed again. Yet those seemingly weak wings take him each year thousands of miles across sea and land, in autumn and spring.

In colour the landrail is mottled reddish-brown above, with grey under-parts. The carriage of the bird when it runs is odd, for it thrusts its head forward, and the legs are placed so far back that the body looks like toppling. But it is not often to be seen out of cover, and in the spring the signal of its arrival is much more likely to be its mating call than the glimpse of its head in growing grass. The nest is made of dry herbage, and the eggs, from seven to ten in number, are pinkish-buff, spotted and streaked with reddish-brown and ash.

CHAPTER THIRTEEN

Woodcock [*Scolopax rusticola*]

MORE is in dispute, I suppose, and less is known for certain, as to the habits and the natural history of the woodcock than is the case with any other British game bird. How can the sexes be told apart? Is there a preponderance of males over females? How, and why, do woodcock carry their young? What are their habits of migration? What becomes of woodcock in summer drought? And more questions than these.

To take the plumage first. The theory has been held by Gould and others that the young birds can be distinguished from the old by the presence of notched buff markings on the outer web of the first long flight feather, the corresponding feather in the old bird being margined with a thin buff line instead of a series of notches. This, however, has been disproved by later writers, and today it is generally agreed that there is no difference between the plumage of old or young birds, when once the young birds have fully developed their flight feathers, and that there is no difference between the plumage of the male and female.

There seem to be two types of plumage, however, as regards the general aspect of the bird, some woodcock being greyish in the general tone of their upper parts, while others are a rich rufous brown. No one has yet been able to establish any definite reason for these differences, either as to age or country of origin.

What has not been noticed by all writers on woodcock plumage is the brilliance of the spring or breeding dress. I remember well the first time I saw a woodcock sitting. There were two nests of which I was told on the borders of an oak wood, each among bracken. I had read, as no doubt have others, that the bird is extraordinarily difficult to see, owing to the way in which its plumage blends with the surroundings of the nest. And I found the bird as easy to see as possible. First I caught sight of the large brilliant black eye, and then the bright yellow-chestnut and black stripes running down the back, as vivid a contrast as the colouring of a tiger skin. I had often handled a woodcock and looked at its plumage in autumn and winter, but this was a different bird altogether.

Woodcock vary greatly in the range of the general colouring of their plumage. Pure white birds have been recorded from time to time, and birds with a few white feathers are not uncommon. Cream and cinnamon blended with dark markings also occur, and I shall always remember a November day in Sussex when duck were on the wing and a bright buff woodcock passed between a neighbour and myself, neither of whom was able to shoot at it. The most beautiful variety, however, that I have seen was a bird of which all the lighter markings were grey, almost lilac.

For whatever reason, the woodcock has always been prized for two particular feathers in the wing, the pin feathers or pen feathers, which are to be found near the angle of the wing, at the base of the first primary feather. These feathers, which are strong, pliant and sharply pointed, used to be prized by miniature painters, who used them as brushes. I have often wondered whether there were painters in those old days who knew of and used the similar feathers which are to be found in the wings of a snipe. They are smaller, of course, but equally strong, and might be used, you would suppose, for the finest possible work.

Several peculiarities of structure characterize the woodcock. The bill is an instrument marvellously adapted towards its purpose of obtaining food. It is some 3 inches in length, and the upper mandible is furnished with nerve cells which culminate in a sort of spongy cushion tipped with a downcurving nail-like hook. This nervous weapon can be plunged deep into soft soil and through the senses of its tissue feel the presence of the worms that are the bird's staple diet. Where woodcock are numerous, as in the West of Ireland, the borings made by their bills are a marked feature of the neighbourhood of woods. One particular slope of hill on the shore of Lough Mask remains in my mind—a memory of rough boulders, holly trees, and a stretch of grass with the droppings of cattle pierced like sieves by woodcock.

Eye and ear are both peculiar in position. The eyes are so far back that the bird, in order to see in front of it, lowers its beak, and it is difficult to understand how eyes so placed can

Plates 14—1

Top : YOUNG WOODCOCK HATCHING OUT.
n : AMONG THE RUSHES : WOODCOCK FEEDING.

be of assistance to the bird in flight or the search for food. The bird is nocturnal in its habits, and with its large prominent eye probably does not see well in daylight, at all events not when suddenly startled. This would account for the extraordinary way in which it seems to dodge trees and other obstacles when suddenly flushed in covert. A woodcock, by the way, rises with a loud clap of the wings—just the noise made by a feeding nightjar when it knocks its wings together above its back.

Another puzzle is the placing of the ear. This is below the eye and close to the corner nearest to the bill. Here, again, it is difficult to guess what advantage this special position of the ear may confer on the woodcock; possibly it enables the bird to hear a moving worm, but other birds, as you may see by watching a feeding thrush, when they listen cock the head sideways.

Woodcock, as regards Great Britain, are partly resident and partly migratory. Many breed in spring, but the larger number arrive in the autumn and return to their native country—Norway, Sweden, Finland, Siberia—for the nesting season. The first full moon in November is the traditional time for arrival, and the birds, coming to the east coast, rest for a short period before passing on through the country. This is the reason why owners of 'cock coverts, if they find their woods suddenly visited by migrants, get their shooting parties together at once. The birds may be there today and gone tomorrow.

Every season, by the way, one hears the same story of large numbers—an acre, the phrase goes sometimes—of migrating woodcock floating drowned on the surface of the North Sea. Fishermen on the Dogger Bank have seen them, you are told, or someone travelling to or from Norway. But I have never been able to get closer to the teller of the tale than that; I have never met anyone who with his own eyes has seen an acre of floating woodcock.

A woodcock hardly makes a nest—just a scraped hollow among leaves. The egg is one of the most beautiful of British birds', greyish-buff blotched and spotted with reddish-brown and lilac-grey. It is almost oval in shape, but pointed at the smaller end. The birds pair early, probably in January, but, as with other species, the date depends largely on the weather. I remember a January evening as I stood in my garden seeing a pair of woodcock fly down the lawn in courtship, glancing, rising, falling, the loveliest sight of a winter-spring evening, a dance in the air. I would never shoot a woodcock in January.

Are woodcock increasing as nesting birds in Great Britain? I believe that they are. At one time they were killed in large numbers in the spring, doubtless when they were actually nesting. This seems incredible, but if you realize that there is no close period for them in the Game Laws, and that it was not until 1880 that it was made illegal to kill them between March 1st and August 1st, it is easy to see how the numbers of paired birds must have been reduced. Today County Councils have the power to decide on the dates of close seasons for birds such as woodcock and snipe, and the result has been, especially in the southern counties, that the number of woodcock nesting increases every year.

As the birds pair early, so the nesting is early. I have seen nests with the hen sitting at the end of March. During the nesting period the mate engages in a sort of love flight, known as rôding. This corresponds with the drumming flight of the snipe, but whereas the snipe flies high in the air and only makes its drumming noise on its downward dives, the woodcock flies steadily and slowly about the height of the tops of the trees where the nest lies, and utters a curious croaking sound, something like "ork, ork, ork." Both snipe and woodcock fly in a sort of rough circle round the nest, and though I have been told that a woodcock will rôde for half an hour, I have not myself timed so long a flight. Rôding is an evening performance, whereas the snipe drums at any time during the day, and even in the dark. It would be interesting to know the derivation of the word, which is obscure. It is not to be found in Daniel's *Rural Sports*, which was published in 1807.

That woodcock carry their young is a fact attested by so many witnesses that no one need have any doubts on the subject. Whether or not either parent will pick up a chick is uncertain, and perhaps the method of carrying is not always the same. Some witnesses have seen the parent pick up the chick between the thighs, and as it were steady the little bird there with the beak; others describe the chick as carried by the parent's feet. Is it not likely that the method of carrying would vary with individual woodcock, just as we, for example, might pick up a child and carry it in a crook of the elbow, or tuck it under the arm? After all, a parent woodcock picking up a chick would do so hurriedly, for she would be removing her young one from what she would think was danger.

Among woodcock, is there a preponderance in the sexes of males above females? The late W. R. Ogilvie-Grant believed that there is, and he has described a visit to the Azores when he shot woodcock—the custom of the country—in spring, and examined sixty, of whom only four were females. It should be noted, however, that since he shot these birds in the nesting season, the females would naturally most of them have been sitting on their eggs. There seems to be no other satisfactory evidence of a preponderance of males, and my recollection of bags of woodcock made in this country is that the sexes were about equally divided. There is only one way, it may be added, in which the sexes of adult woodcock can be determined. In the female the pelvic bones are farther apart than in the male, and an expert can tell the difference with a touch.

The habits of woodcock in the summer suggest a curious problem. The birds feed on worms, and they look for their food in wet and marshy places. During the autumn, winter and spring, while the weather is open, they have no difficulty in feeding full, and they have voracious appetites. During hard weather they take to what shelter they can under trees and in ditches, and eat a certain quantity of vegetable matter; but in prolonged frosts they lose weight and strength, and may starve as do other birds. But what happens to woodcock in the drought of summer? When the home-breeding birds have brought off their young, and the young are fully fledged and able to look after themselves, what becomes of them if we get a succession of months such as we had in the summers of 1921, or 1933 and 1934? Some people give you the simple answer that they die, but if so, where do we get the breeding stock of the following spring? Others believe in a form of migration, but if that happens, to where do they migrate? We hear of no corresponding influx of woodcock on such occasions elsewhere. It is a problem of which at present there seems to be no solution.

A curious belief attaches to the habits of wounded woodcock. Birds are occasionally shot which have suffered previous damage by shot, and a broken leg, for example, has been found bound and plastered with mud and feathers. There are people who seriously believe that the bird dresses its own wounds, and binds a ligature of its own feathers round the fractured limb. The more simple explanation that the feathers and mud adhere to the leg as the wounded bird drags itself along the ground is dismissed as less interesting.

A woodcock weighs rather less than a partridge. A bird in good condition weighs about 12 ounces, and an average taken throughout the shooting season works out at a fraction under. The late Sir Ralph Payne Gallwey once handled a bird of 1 pound 2¼ ounces, and in April, 1921, a correspondent wrote from Kerry to the *Field* stating that in forty years' experience he had often weighed woodcock of 17 and 18 ounces. Yarrell quotes a letter from Lady Peyton written from Uggeshall on December 25th, 1801, in which she says that she and her husband saw a woodcock weighed which turned the scale at 27 ounces. She mentions another killed at Hadleigh in Suffolk weighing 24 ounces. This letter has been ignored or discounted by good naturalists, among them the late James Harting, for many years natural history editor to the *Field*. But have we the right to ignore such statements, attested as they are by more than one credible witness (among them the first Lord Stradbroke), just because they were made so long ago? One of the chief living authorities on woodcock, Mr. P. D. Williams, whose shoots at Lanarth make history, has no hesitation in accepting them.

CHAPTER FOURTEEN

SNIPE

Common Snipe (*Gallinago cælestis*); Great Snipe (*G. major*); Jack Snipe, *G. gallinula.*

COMMON SNIPE [*Gallinago cælestis*]

AS with woodcock, so with snipe, the sexes are indistinguishable in plumage; but the female is the bigger bird. And, like the woodcock, the snipe has puzzled naturalists with problems, first and chief of which is that of the sound, described sometimes as "bleating" and sometimes as "humming" or "drumming," which the bird makes during the breeding season. To me this is a problem still, though at one time I thought that I had solved it for certain.

This is what happens. The bird takes wing and rises to a considerable height. Then it turns on its side and swoops or glides downwards. As it glides downwards, it produces a noise like the bleating of a kid, which has earned it the name of "heather-bleater." It flies up again, swoops down again, up again, down again; in a rough circle or parallelogram with curved corners, always with its breast as it swoops turned towards the centre of the circle, where, you may guess, on the ground below lies its nest. Each time as it swoops there comes down to you the "bleat" or "drum."

How does it make this noise? For a long time dispute ranged between two theories, either that the sound was vocal, made in the bird's throat, or that it was made by its wings, which some observers have described as rapidly beating. Neither theory seemed to fit the facts. The noise was made on the downward swoop, therefore, ran the argument, it must be a sound produced somehow by passage through the air; at the same time, there were careful observers who could discern no movement of the wings to account for it.

Then in 1856 came Meves, a Swedish naturalist. He had noticed that when the snipe swooped downwards in its drumming flight, the two outer feathers in the fourteen feathers of the tail stood out at right angles to the rest. He fastened a pair of these feathers to wire at the end of a stick, struck the stick through the air, and found that he could reproduce the sound of drumming. Later, in 1907, Dr. P. H. Bahr experimented with these two outer tail feathers stuck into a cork, which he whirled round his head at the end of a string, and got the sound as did Meves. His conclusion that the bird produced its drumming sound by means of the two outer tail feathers was generally accepted; but it occurred to me, later still—I think it was in 1923—to try what I thought was an even better experiment. I took the tail feathers of a snipe and fastened them at right angles into an arrow, behind the feathers of the shaft. I shot my arrow high into the air, and as it came down it made exactly the sound of a snipe drumming. The sound ceased as the arrow hit the garden lawn.

That seemed to me then conclusive. And so up to a point it seems today. But not everyone will accept the conclusions suggested by Meves's or Dr. Bahr's or my own experiments. Some years ago a correspondent of the *Field* whom I knew to be a good naturalist came to see me at the *Field* office. He wanted to discuss the method by which the greater spotted woodpecker makes its drumming noise in spring, and had come to give me his reasons for believing, as I do, that the sound is vocal, not instrumental; that the bird produces its incredibly loud love call in its throat, as do other birds, and not by hammering with its beak on wood. "I think," he said, "that I should accept most of your conclusions as to these sounds—with the exception, perhaps, of one." I asked what it was. "I believe," he said, "that all sounds made by birds in courtship are vocal, and not mechanical—not excepting the drumming of the common snipe." "But surely," I said, "Meves—Bahr—my own experiments with an arrow have proved the tail-feathers theory beyond any doubt?" "You may think so," he said, "and perhaps you are justified in thinking so. But have you watched snipe drumming very closely?" "For many hours together, through glasses," I told him. "Then have you noticed that sometimes, not always, the bird begins to drum just before it turns to swoop downwards?" I had not. "A friend told me of it," he said, "and I have seen and heard it myself. And another point. Would you not expect other species of snipe, if the drumming is mechanical, to produce the sound in the same way? Do you remember what Yarrell says of the drumming of the Great Snipe?" I could remember nothing, but I realized that the copy of Yarrell which I have at home is the first edition in three volumes, and that much was added to the later editions in four volumes. I took down from the office bookshelf one of these four volumes, and set eyes for the first time on a passage quoting "the observations of Mr. Grieff and Mr. R. Collett. The Great Snipe has a lek or playing-ground, similar to that of some of the Grouse tribe, the places of meeting, or Spilpads, being frequented by several pairs of birds from dusk to early morning. The male utters a low note resembling bip-bip, bip-bip, bipbiperere, biperere, varied by a sound like the smacking of a tongue, produced by striking the mandibles together smartly and in rapid succession; he then jumps upon a tussock of grass, swelling out his feathers, spreading his tail, and drooping his wings in front of the female, and uttering a tremulous sbirrr. This is called 'drumming' by Mr. Collett, but the late Mr. Dann says that the birds fly to a great height and produce a drumming noise as they descend by a slight and peculiar vibration of the wings."

Then where are we? The Great Snipe has no outer tail-feathers capable of producing a drumming noise when in flight, nor has the Jack Snipe, which is said to soar above its nesting ground and to make a noise like the sound of a horse cantering over a hard road. Is it then just a strange coincidence that the Common Snipe has two outer tail feathers, which can be made to produce a sound of drumming, while the bird actually makes an exactly similar sound in its throat? That seems to me incredible. But I have never yet heard the bird begin to drum before it turns for its downward dive, and if or when I see and hear that happening, I shall have to reconsider all my conclusions.

Like woodcock, snipe are partially resident in these islands and partly migratory. I do not think that there is any reason to suppose that the numbers of breeding pairs are increasing, as I believe is the case with woodcock. Nor have I heard the same stories of snipe drowned on their way to England from Northern Europe, as I have heard, and doubtless shall hear again, of woodcock; which appears to me an additional reason for disbelieving the woodcock stories. There is perhaps no method by which we can make any exact comparison between the numbers of migrating woodcock and snipe which visit this country and Ireland in the autumn, but I should expect to find that the snipe greatly outnumbered the woodcock. Many more large bags of snipe to one gun have been made, especially in Ireland, than have been made of woodcock.

A snipe flies fast, and its twisting, zigzag course makes it a difficult mark for beginners. On rising from the ground it utters a sharp double cry, which is traditionally rendered in print as "scape-scape." I do not know who first described it in this way, but he has been copied by writers ever since. And I have never heard either a "c" or a "p" in the cry. It is doubtless untranslatable to paper, but there is something nasal in it: "snaitch-snaitch" is something like the sound that I get when the bird rises. And only when it is startled. A snipe leaving the ground to drum rises silently. There is one other sound, besides the drumming, which the bird makes in the breeding season. Both of the paired birds make it, and it sounds to me less like a love-call than a cry of anxiety or alarm—"chick-a-chick-a-chicka." I have never heard that anxious, repeated cry unless there were a nest or young birds near. And there is another habit which seems to belong only to nesting time: the bird will perch on a gatepost, or the post of a fence, or the dead bough of a tree. It wants to look round, I imagine; at all events I have never seen a snipe perch on a bough with leaves.

The nest is a mere hollow, generally among rushes, and lined with dry grass. Four is nearly always the number of the eggs, which are pear-shaped and are placed as are those of plover and other waders, with the thin ends pointing inwards. They are very handsome eggs, pale olive-brown or olive-green spotted and blotched with purple-grey and purple-brown. Often these blotches run round the egg spirally. Few nests give me more pleasure to find than a snipe's, and few sounds of spring more pleasure than that of a snipe drumming. I have heard the sound early and late, by day and by dark: as early as the dusk of January 17th in a Surrey water-meadow; before dawn on a grouse moor above the Aberdeenshire Dee; and in August above a boggy field near my

Plate 16

TWO OUT OF FOUR EGGS TO COME: THE SNIPE'S NEST.

home. I should guess that this last was over a second nest.

Four ounces is the usual weight of a Common Snipe, though you may find an occasional bird weighing 5 ounces, and a weight of 8 ounces has actually been recorded. The tail feathers number fourteen.

GREAT SNIPE [*Gallinago major*]

This bird is very like the Common Snipe in appearance, but larger, and generally darker, except for the four outer tail feathers on each side, which are mostly white. The tail feathers number sixteen.

The Great Snipe does not nest in this country, and those that visit us—generally between August and November—are mere stragglers from the main route of migration, which runs from Siberia to Africa. The nesting range extends from Scandinavia eastwards through the north of Asia, and it was in Siberia that Seebohm made the observations of its habits in the breeding season which have found their way into the books of later writers. Seebohm describes a curious noise made by the males:

"In the pairing season the males are gregarious, and have a sort of 'lek,' like that of the ruff, or of many species of grouse. . . . They had one very curious habit which I noted: they used to stretch out their necks, throw back the head almost upside down, and open and shut their beaks rapidly, uttering a curious noise like that produced by running the finger along the edge of a comb. This was sometimes preceded by a short flight, or by the spreading of the wings and tail. I have never heard the Great Snipe utter any other call or alarm note."

I have never seen a Great Snipe on the wing, but have been told that the flight is slow and straight, and that the bird will not fly far. An average weight is 8 ounces, but there is a record of a bird weighing 10¼ ounces.

Jack Snipe [*Gallinago gallinula*]

A very beautiful small bird. Once I was able to look at a Jack Snipe close at my feet—how different a bird from the little thing picked up in a day's shooting! I was fishing a tiny stream that runs into Lough Nafooey beyond Lough Mask on the borders of the Joyce Country and Connemara—Lough Nafooey, where I talked to an old man who rowed a boat for fishermen and told stories of fairies, whom I am persuaded he saw. For I on that day saw a fairy; a bird sitting in thin grass, brown and purple and green, shining like a jewel in the Irish sunlight, in the blue afternoon of Galway, fearless of any human approach. Perhaps it was half asleep; at all events I looked at it long, wondering that a bird could be so near and bright, and I stooped to touch those glistening feathers. Then it woke and flew away.

The name "jack" is a kind of diminutive. Thus a pike under 2 or 3 pounds is a jack, and in the north of England a whimbrel is known as a half-curlew, jack curlew, or curlew knave. And the Jack Snipe is a very little fellow, smallest of his tribe. He is not a resident in this country, and the nesting range belongs to the Arctic Circle, but the bird is an early migrant, and visits us in September, to stay till March, in the same haunts as those of the Common Snipe, but as a solitary bird, and never in large numbers together. In its habits it is something like the landrail, for though it traverses great distances on migration, and therefore possesses great powers of flight, it will not take wing unless it must, and then flies a very short way, much like a butterfly, and drops suddenly as if it was shot—as, indeed, many inexperienced carriers of a gun suppose it to have been. They, when they walk forward to pick it up, see nothing at first; then at their feet a small bird flits up unharmed and flickers away to settle down 50 yards from them in the bog again; to get up again and flicker away again.

Although so small a bird, it has a loud voice and lays a large egg. John Wolley describes its cry as he heard it in Lapland in the breeding season:

"It was on the 17th June, 1853, in the great marsh of Muonioniska, that I first heard the Jack Snipe, though at the time I could not at all guess what it was—an extraordinary sound, unlike anything I had heard before; I could not tell from what direction it came, and it filled me with curious surprise: my Finnish interpreter thought it was a Capercaillie, and at that time I could not contradict him; but I soon found that it was a small bird gliding at a wild pace, and at a great height over the marsh. I know not how better to describe the noise than by likening it to the cantering of a horse in the distance over a hard hollow road; it came in fours, with a similar cadence, and a like clear yet hollow sound."

Wolley found the nest, with eggs in it of the same size as those of the Common Snipe. A Jack Snipe's egg weighs 1½ ounces; the bird itself 2½ ounces.

CHAPTER FIFTEEN

DUCK

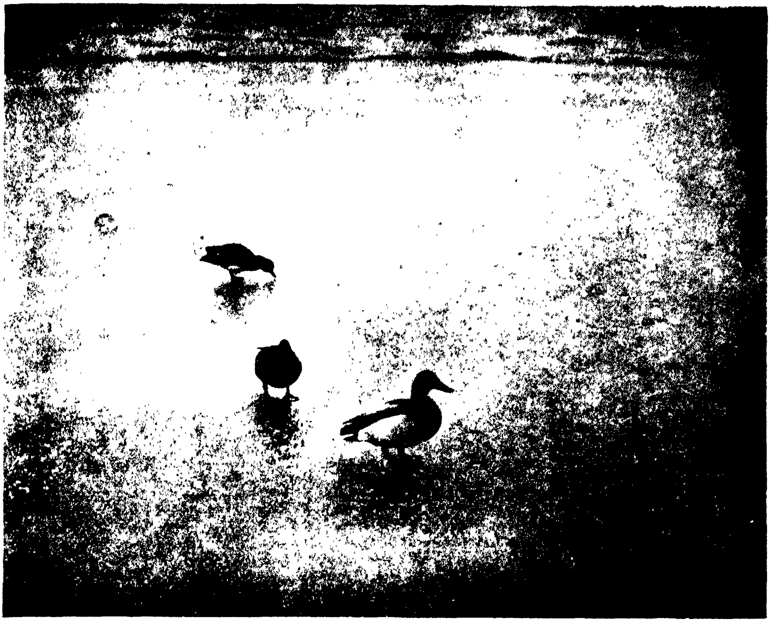
Wild Duck (*Anas boscas*); Teal (*Nettion crecca*); Garganey (*Querquedula circia*); Shoveller (*Spatula clypeata*); Pintail (*Dafila acuta*); Wigeon (*Mareca Penelope*); Gadwall (*Anas strepera*); Common Pochard (*Fuligula ferina*); Tufted Duck (*Fuligula cristata*); Golden-eye (*Clangula glaucion*).

WILD DUCK [*Anas boscas*]

THIS is the ancestor of our familiar friend of the farmyard. Mallard is the name proper to the drake, and the word is akin in its formation to such descriptive names or nouns as coward, drunkard, laggard, sluggard, braggart, the termination -ard or -art emphasizing the quality to which it is applied. Thus the wild drake is a very male or masculine bird, and when you see him with his shining green head and the purple-blue patch on his wing, and hear him loudly proclaiming his existence, you recognize him at once as a gay, swaggering, noisy fellow.

In his autumn and winter plumage the mallard is a bird of very fine feathers. But he undergoes a strange change in summer, when he loses his green crown and becomes as dull as his mate, though with a darker head and neck. At this time, from May to August, he goes into his "eclipse" plumage, and only begins to dress himself well again in September. By October he is his own bird once more.

Wild duck are resident in this country, but their numbers are reinforced by large numbers which come to us for the winter. Our resident birds pair early, and perhaps for life; at all events, unlike his descendant drake on the duckpond, the mallard is monogamous and a faithful mate. A friend of mine, the late Alfred Gilbey, one of the finest shots of his day, told me that once in January or February, I do not remember which, a pair of duck came over him and he killed one of them at a long distance. The other flew on, but finding itself alone, came back and flew round and round looking every-



Plates 17 18

Top: THE FROZEN LAKE: MALLARD AND WIGEON.

Bottom: WILD DUCK: YOUNG BROOD WITH MOTHER.

where for its mate. He vowed that he would never shoot a wild duck in January again.

A wild duck makes a big nest of grass, mixed and lined with down from the bird's body. Generally the nest is placed on the ground, among reeds or small bushes in the neighbourhood of water. But sometimes the duck will choose a place far from a stream or pond, and will even build in a tree, a pollard willow, for instance, or in the disused nest of a magpie or crow. She lays from eight to ten eggs, rather smaller, as befits her stature, than those of the farmyard duck, but of the same pale creamy-green. When a duck nests in a tree it may seem a puzzle to get her young ones to earth or water, but she solves it by the simple process of pushing them over the edge. Anthony Collett, in *British Inland Birds*, writes of the "showers of ducklings" which are sometimes to be seen in the spring in Kensington Gardens, where the tame wild duck nest in some of the old elms. "The fluffy little ducklings fall almost as lightly as thistledown, and are off to the Round Pond in no time."

Years ago decoys for duck, areas of water perhaps 3 or 4 acres in extent, were common on the coast, particularly in the Fen country. Immense numbers of duck were taken by fowlers, who rented the decoys for a few pounds a year, and sold the duck they caught in London and other markets. The process of a decoy is somewhat complicated, involving the use of trained decoy ducks to attract their fellows, long screens of reed to hide the fowler, a trained dog to move the duck as the fowler means them, a "pipe" or series of hoops covered with netting, built over a narrow cutting of water, the "pipe" curved and tapering to a point, and a tunnel net. The pipes are so constructed that the fowler can show himself, or send the dog to show itself to the duck in the pipe without being seen by the rest of the water. The duck are thus gradually driven further and further up each pipe in turn, till they are forced into the tunnel net at the end, from which the fowler takes them at his leisure, to break the neck of each in turn—a gruesome business.

The derivation of the word "decoy" is disputed. "Coy" is from the Dutch *kooi*, an enclosure, and the "de" may be the shortened sound of "duck," or possibly a corruption of the Dutch *eende*, duck. In either case it becomes a solecism to write or speak of a "duck decoy." Decoys still catch enormous quantities of wild fowl on the Continent, but, fortunately, there are few now in use in England.

Wild duck are night feeders and are omnivorous. Mallard are heavier than duck, and a good mallard weighs 3 pounds. But a pair were recorded in the *Field* of November 23rd, 1929, which weighed 3 pounds 8 ounces and 3 pounds.

TEAL [*Nettion crecca*]

Of all sporting duck, teal are to me the most attractive. Partly because of their size, for they are the smallest of the ducks that visit our waters in winter, their flight, which is extremely swift, seems swifter still; and the drake, with the bright green streak across the side of his chestnut head, is one of the most brilliantly plumaged of all the duck tribe. Like the mallard, he goes into eclipse plumage in the summer months, and also like the mallard, he is monogamous.

One of the interesting habits of teal is their sudden appearance in unlikely places. I have had a pair whistle past my head as I stood at dusk in a garden far from water, and I remember once, when ferreting rabbits in a bank between two open fields, looking up and realizing that a single bird had flown over me at a great height. At any turn of a stream, at any time of year, you may put up a pair of teal. But to see teal at their best you should watch a bunch of them. I have in my mind an October evening on a large pond in Surrey, when I watched a bunch of teal circling round, swooping down, rising again, swooping down again, until they settled for the night. But when I think of teal at their best it is as I saw them years ago in Ireland, over the clear channels and the grey rocks of a great lough; when I realized for the first time what was meant by a pronouncement in *Baily's Magazine* by a writer who gave it as his opinion that the most difficult of all shots was the second barrel at a bunch of teal. At the sound of the first barrel the bunch, as it were, explodes; each individual bird goes his own way and none the same way as another. That vision remains with me—part of a group of memories of mile beyond mile of lough, dark faces under black hats, panniered donkeys, shawled old women, barefoot girls, shadowed chasms in far hills, all the mixed beauty and cruelty of Connemara which once I saw and I suppose shall not see again.

A teal's nest is a wonderful collection of grasses and leaves, large and cosy and built, as a rule, in the rough herbage that borders water. It is thickly lined with the bird's own down and feathers, and may hold from eight to a dozen eggs, buff-cream with a tinge of green. If I had a pond suitable for teal, I should try to attract them; but the bird is wayward and capricious, and will not go the way she is wanted; she chooses a place for her nest where she herself wills.

GARGANEY [*Querquedula circia*]

Sometimes called the Summer Teal, or Cricket Teal, the latter from a curious jarring noise which it makes in spring. It is a migrant, and arrives to breed on inland waters such as the Broads. In plumage it differs from the Common Teal in lacking the brilliant green streak across the side of the head, while its most conspicuous marking is a white streak beginning behind the eye and running for some distance, gradually narrowing, down the dark brown neck. It was this streak that led to the finding of the only Garganey's nest I have ever seen. It was on the first day of June, and I remember the date because in the evening of that day I first heard within the same minute two sounds I had never thought to hear together, the boom of a bittern and the call of the cuckoo; and it was by Hickling Broad, within a few yards of the lodge where I had been a guest, that Jim Vincent, best of guardians of birds' nests, found and showed me the nest. It was under a matted roof of reeds, and how he found it only a great bird's-nester such as he is could tell you; he had caught sight as he passed of the light streak over the duck's eye. Even when you were shown it, the streak was almost indistinguishable from the pale lines of the foliage of the reeds.

SHOVELLER [*Spatula clypeata*]

This bird in its winter and breeding plumage is most brilliant, with its dark green head and neck, white upper breast, chestnut lower breast and belly, and wings and flanks patched with brown, dove grey, white and blue-green. The duck as usual is a sober brown, and the drake in his eclipse plumage loses all his brightness. But the most conspicuous feature of the bird is the bill from which he takes his name, and of which the upper mandible is prolonged and broadened into the shape of an inverted flat spoon. This bill is a wonderful instrument, lined at the sides with sensitive plates, which enable the bird to test the quality of the food it seeks on the surface of the water. A shoveller picks up food from the water much in the same way in which a farmyard duck gobbles duck-weed.

Most of the shovellers seen in this country are winter visitors, but some remain to breed. The nest is usually near water, but may be found in heather, with pale green eggs, slightly smaller than those of the wild duck.

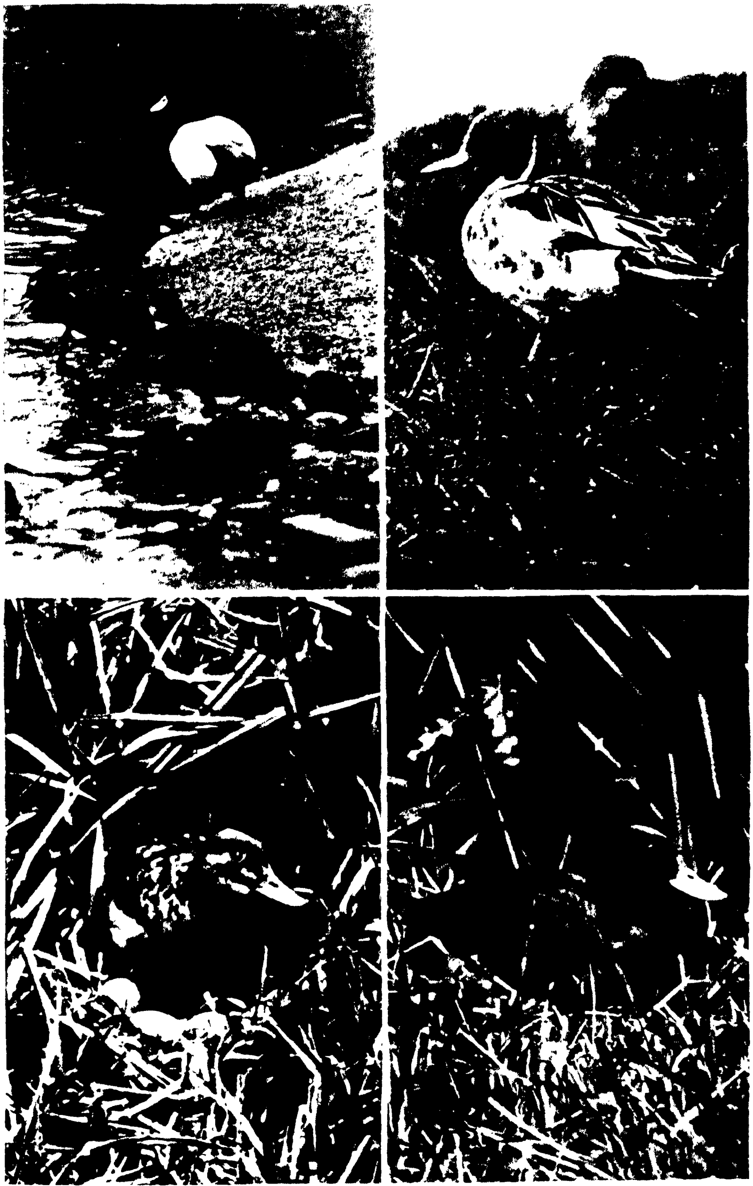
PINTAIL [*Dafila acuta*]

The tail, long and pointed, gives its name to the bird, which is unlikely to be confused in appearance with any other of the ducks. The most conspicuous marking of the drake is a broad white streak that runs from the back of its brown head down the sides of its neck, to join its white breast. The back and upper parts are beautifully pencilled grey. The female is smaller than the male, bright brown, with a shorter tail.

But pintail may sometimes set a riddle. Like the Shoveller, the duck is a winter visitor, but lately has taken to breeding in this country, and will occasionally mate with wild duck. I have handled a hybrid which was the result of this mating; it had been noticed on a Sussex pond by a gamekeeper, who had heard its peculiar note among the quacking of other ducks. The skin is now in the Natural History Museum.

WIGEON [*Mareca penelope*]

Professor Walter Skeat has discovered in Levin's *Manipulus Vocabulorum*, a book of 1570, the oldest spelling of this name as wigion, and James Harting in his *Handbook of British Birds* quotes him as arguing that "the insertion of the *d* in the word has no more etymological significance than it has in *judge* from the French *juge*." I cannot follow this reasoning, for surely our English *judge* and the French *juge* are both



Plates 19–22

(*a*) SCAUP AND GADWALL.
(*b*) PINTAIL.
(*c*) NESTING POCHARD.
(*d*) TUFTED DUCK SITTING.

derived from the Latin *judex*. But Harting is undoubtedly right in urging that if we spell "pigeon" without a *d* we must spell "wigeon" by the same analogy, and "widgeon" must be regarded as a violation of established laws.

Wigeon are mainly winter visitors, but they breed in parts of Scotland, and occasionally, possibly in increasing numbers, in England. I remember being shown, years ago, the remains of a wigeon's nest in the garden at the Zoo. She had somehow got out of her aviary, Three Island Pond, and nobody had seen her or missed her. But she chose a place under a yellow privet bush in a garden bed close by, and there she laid ten eggs. From those one fine morning she hatched eight little ducklings which she tried to take with her to the pond, to be baffled, naturally, by the ratproof fence. She lost three out of her eight, but she was discovered with the other five and duly swam with them—the first wigeon, I believe, to breed in captivity.

Without the brilliant green of the mallard or the teal, the wigeon is still a remarkably handsome bird, with its chestnut head and yellow crown, and the finely pencilled feathers of its back and flanks. It feeds on grass, by day as well as night, and is particularly fond of *Glyceria aquatica*, "flutter-grass." It is as graceful in its movements on land as on the water, and dives as well as it swims. And of all cries of water-fowl, nothing is more musical than the call of the wigeon. That long "whee-oh" comes from the very heart of night upon the water.

GADWALL [*Anas strepera*]

Francis Willughby, who died in 1672, and left his *Ornithologiæ Libri Tres*, written in Latin, to be published and translated by John Ray, spells the name of this duck as we print it today. But Christopher Merrett, who published his *Account of the Animal, Vegetable and Mineral Productions of Great Britain* in 1667, has the spelling "gaddel," which James Harting thinks may be an error in copying for "gabble," because of its noisy cry. We might compare this name with "Whewer" or "Whew duck," which are other names for the wigeon; and with "shoveller," "pintail" and "mallard," which are descriptive names of other duck. We can also compare the onomatopœic "cricket" teal, but get no further with the name "teal" itself. On the whole the balance seems in favour of Harting's suggestion.

The gadwall is the rarest of the true ducks, so far as this country is concerned, but it breeds on a few waters in the Eastern Counties. It is a handsome bird, mainly mottled grey and brown, with the point of the wing and small coverts chestnut and the speculum white. The nest is built on the ground, usually in a dry spot among brushwood and grasses, and the eight to a dozen eggs are dull cream colour, hardly tinged with green.

COMMON POCHARD [*Fuligula ferina*]

With the Pochard—also called the Red-headed Poker, or Red-eyed Poker, or Dunbird—we pass into the class of diving ducks, which get their food below the surface of the water. They feed on weed, fish, crustacea and molluscs, and they are valuable as table birds according to their diet. Their favourite foods are sea-grass (*Ruppia maritima*) and grass-wrack (*Zostera maritima*), both of them common at the mouth of rivers; they pull up these weeds so as to eat the roots. When they can get plenty of vegetable food they are well-flavoured, but if they can feed only at sea, on fishes and shellfish, they become coarse and rank, just as the curlew of the seashore differs from the curlew of the open moor.

Pochard drakes have the middle part of the body a delicate grey, or rather a pencilled pattern of grey and black. The head and neck are bright chestnut, the eye is red, the breast and shoulders are black, as are the wing-tips and the tail. The duck follows this scheme of colouring, but in dark and light brown; she is, as Anthony Collett in *British Inland Birds* has put in language pleasantly different from the more scientific descriptions of bird plumage, "dark brown fore and aft, and a rather lighter brown amidships." Drake and duck make a pleasant sight of winter; there are few sights which I welcome more than the vision of winter visitors, such as pochard and tufted duck, to the broad space, sometimes empty in autumn, of inland waters.

Pochard, when they come to large ponds and lakes in winter, keep mainly to the middle, away from the bank or shore. They are active in diving, and are not always easy to get on the wing, but they fly fast and high. Like other duck, they nest near water, and their eggs, like others', are eight to a dozen, but of a dingy kind of pale green-brown.

TUFTED DUCK [*Fuligula cristata*]

Like the pochard, the Tufted Duck is a winter visitor, and dives for its food. It is a small duck, swims very low in the water, and pops under with the agility of a dabchick. It gets its name from a pendulous tuft at the back of its head, and is sometimes called the Golden-eye, from the brilliant orange of its iris, but the true Golden-eye (*Clangula glaucion*) is really a very different bird in appearance, with a round white patch at the base of the bill, a green rather than a black head—there are merely green lights in the black head of the tufted—and a white breast. Nobody better than Anthony Collett has described its appearance when swimming, "a small black duck, with a white patch on each side, shaped much like a Dutch wooden shoe, with the toe pointing towards the tail." The drake has a pale blue bill, tipped with black; the duck has the same outline of white and dark, but the drake's black gives place to a sooty brown.

Tufted Duck breed occasionally in various parts of the country, and in considerable numbers in a few localities. They have a curious habit, being in the main migrants, of staying so late in their winter quarters that they raise hopes in their host's mind of a nest on his property, and then, perhaps as late as May, they disappear. The nest is placed in the usual situations preferred by ducks near water, and though the Tufted Duck is smaller than the Wild Duck, the eggs are about the same size. Tufted Duck fly fast and well, but, like Pochard, they keep to the middle of the waters they frequent, and are not easy to put on the wing.

GOLDEN-EYE [*Clangula glaucion*]

This is a winter visitor, but not so common as the Pochard or Tufted Duck, and has never been known to breed in this country. As I have pointed out, the Golden-eye can never be mistaken for the Tufted Duck if a look-out is kept for its white breast, instead of the Tufted's black breast, and the white patch at the base of the bill. But the Golden-eye's plumage in immaturity is even more confusing than that of other ducks. The young drakes are very like the ducks, and in Hawker's time were believed by many people (though not by him, for he followed the teaching of his favourite naturalist Leadbeater) to be a separate species, to which the name morillon was given. Leadbeater pointed out that most of the drakes did not come to their full breeding plumage until close to the breeding season, which led naturally to mistakes in identification earlier in the year.

CHAPTER SIXTEEN

SWANS

Mute Swan (*Cygnus olor*); Wild Swan or Whooper (*Cygnus musicus*); Bewick's Swan (*Cygnus minor*).

MUTE SWAN [*Cygnus olor*]

LIKE the pheasant, this bird is generally regarded as a domesticated species, but the date of its introduction is unknown. It breeds wild, too, as near to these shores as Denmark, Sweden and north-east Prussia, and on our lakes, rivers and harbours it has been a familiar and untamed bird for so many centuries that it may surely deserve to be named as a British species. If it is not wild in Ireland, where on some vast lough you may see a pair of swans far from any haunt of man, and unapproachable—if, indeed, any sportsman would care to try to get near to them—what is the definition of a wild bird?

The most famous breeding-place in England is, of course, Lord Ilchester's swannery at Abbotsbury in Dorsetshire. Here hundreds of swans nest every year, and visitors may be privileged to watch the breeding birds at close quarters. When I first went to this wonderful inland water I asked the keeper whether there was any basis for the legend, or oral tradition, that a swan could break a man's arm or leg with a blow of its wing. A swan, as most people know who have invaded the neighbourhood of a nest in spring, is a fierce and pugnacious bird, and advances boldly and with hisses on the intruder. But I cannot remember seeing the attack develop seriously, and when I asked the keeper about the legendary strength of the bird he merely laughed. He went up to a swan near him, took it by the angle of the wing, and brought it up to me, a friendly and unprotesting companion. "That's how I lead them about," he said.

If the Mute Swan cannot be exactly described as a game bird, it deserves a place side by side with other species that have been regarded in the past as fair quarry by wild fowlers, the Whooper and Bewick's Swan. But the Mute Swan takes precedence of these, too, in that it is a royal bird, which, when at liberty in a public river or creek, belongs of right to the Sovereign, and of which ownership by a private person cannot be claimed except by grant from the Crown. Those who are at present entitled to keep swans on the Thames are His Majesty the King, Eton College, the Vintners' Company and the Dyers' Company, and the annual ceremony of notching or marking the bills, known as swan-upping, takes place annually when the cygnets are coming to their full growth. Grants of different swan-marks, *cygni notæ*, were made by laws and orders in 1483 and 1496. The ancient names, still in use, for the male and female swan are "cob" and "pen," "cob" meaning "big," but of "pen" the derivation is unknown.

Swans pair for life, and begin to build their nest, new each year, at the end of March or beginning of April. The hen does not lay until her third year, and begins with from three to five eggs, as a rule laying more each season, until she may cover as many as ten or twelve. The nest is made of dry reeds or other waterside herbage, and the eggs are pale sea-green. The hen sits for about six weeks, and the cygnets in their first plumage are grey, which changes to grey-brown, and is later streaked with white, but it is not until their second year that the young birds become entirely white, and not until the third year that they attain the full orange of the bill. The neb, or black knob on the upper mandible, which is larger in the cock than the hen, increases in size with age.

The Mute Swan is not really mute, for it has a loud cry, but seldom utters it: the bird is called Mute to distinguish it from the Whooper, whose trumpeting is loud and melodious.

WILD SWAN OR WHOOPER [*Cygnus musicus*]

This bird's name is sometimes spelt Hooper, but, as Harting points out in his *Handbook of British Birds*, "Whoop" is probably the older form, from the Anglo-Saxon *hwopan*, to cry out; "hoop" is from the French *houper*, which has the same meaning, but is of later introduction, coming in with other Norman words in relation to the chase.

In Yarrell's day a few pairs of these birds nested in the Orkneys, but now Whoopers only occur as winter visitors,

IN FULL SAIL: MUTE SWAN.

Plate 23

arriving from Lapland and other countries to the north-east. They are most numerous in Scotland, but in hard winters come to most of our harbours. The bird gets its name, of course, from its voice, and I know no more moving sound of a January day, nor any more splendid sight of birds, than that of Whoopers flying in a wedge. Hawker has an interesting passage on the note of the bird in summer as distinct from winter. In winter, he writes (*Instructions to Young Sportsmen*), "the only note I ever heard from the wild swan is his well-known hoop. But, one *summer's* evening, I was amused with watching and listening to a domesticated one, as he swam up and down the water in the Regent's Park. He tuned up a sort of melody, made with two notes, C and the minor third (E flat), and kept working his head as if delighted with his own performance." Hawker adds that he had the melody taken down on the spot "by a first-rate professor—Auguste Bertini." And he proceeds to write it down, under the date of April 27th, 1834.

Like the Mute Swan, the Whooper is valiant in defence of its young. Yarrell relates that in the summer of 1839 a pair (possibly one of them the same bird watched by Hawker?) bred on one of the islands in the gardens of the Zoological Society. The cygnets belonging to this brood, "when only a few days old, were sunning themselves on the margin of one of the islands, close to the deep water. The parent birds were swimming near. A carrion crow made a descent and struck at one of the cygnets; the old male Hooper came to the rescue in an instant, seized the crow with his beak, pulled him into the water, and in spite of all his buffetings and resistance, held him there till he was dead."

The readiest way of distinguishing the wild from the mute swan is a comparison of their heads. In the wild swan the base of the bill is yellow and the tip is black; in the mute swan the base of the bill is black and the bill itself flesh-colour or orange, according to age. There is a difference, too, in the carriage of the neck: the wild swan holds his neck upright, with little of the grace of the mute, nor does he arch his wings as if they were sails.

BEWICK'S SWAN [*Cygnus minor*]

This is a swan very like *musicus*, but with less yellow and more black about the bill; the yellow does not extend in front of the nostrils. The habits of the two birds are much alike; both are winter visitors, but Bewick's is commoner in Ireland than the Whooper. Bewick's, as its scientific name implies, is a smaller bird than either of the others. A male Whooper weighs from 20 to 24 pounds, and a female 18 to 19 pounds while Bewick's swan varies in weight from 13 to 15 pounds.

CHAPTER SEVENTEEN

GEESE

Grey Lag Goose (*Anser ferus*); Bean Goose (*Anser segetum*) ; Pink-footed Goose (*Anser brachyrhynchus*); White-fronted Goose (*Anser albifrons*); Barnacle Goose (*Bernicla leucopsis*); Brent Goose (*Bernicla brenta*).

GREY LAG GOOSE [*Anser ferus*]

HERE is a bird the derivation of whose name is disputed. Harting seems to favour the explanation that "lag" is a corruption of the Anglo-Saxon *leag* or *lea*, the field-goose being distinguished from the *rut* or root-goose—that is, the Brent—which feeds largely on the roots of *Zostera marina*. Skeat, however, dissents from this, and states that no Anglo-Saxon word ending in *g* preserves the *g* in modern English. The Oxford Dictionary has a much simpler explanation. The grey lag goose lags—that is, he lingers in England longer than the other migratory species. Yarrell, incidentally, names it the grey-legged goose, but states, correctly, that its legs are dull flesh-colour.

The grey lag, which as a winter visitor still lags long enough behind other wild geese to breed here and there in Ross-shire, Sutherland, Caithness and the Hebrides, years ago nested in the English fens. It is the ancestor of our common farmyard goose, and today as a wild bird it frequents farm fields, where it feeds upon young green wheat.

The weight of a full-grown grey lag is from 9 to 10 pounds.

BEAN GOOSE [*Anser segetum*]

Hawker, rather vaguely for so accurate a man—though to be sure he did not live in the day of great field naturalists—describes the Bean Goose as "a variety of the common one." It is to be quickly distinguished from the Pink-footed Goose by its legs and feet, which are orange. Like the other "grey" geese, it is a winter visitant, coming to us from the tundras of the Petchora River and other northern breeding-places. It gets its name from the nail of its bill, which resembles a horse bean. Weight, 7½ to 8 pounds.

PINK-FOOTED GOOSE [*Anser brachyrhynchus*]

This is the common wild goose of the Yorkshire wolds and the fens of Norfolk. It is smaller than the Bean Goose, weighing no more than 6½ to 7 pounds. "Pink-footed" is its easy distinctive name, and *brachyrhynchus* describes its very short, pink, black-nailed bill.

The depredations of farm crops committed by these geese can be prodigious. I have heard of a case of an Aberdeenshire farmer who had 20 acres of clover seeds, and who, to keep these birds off his crop, used every night to light a chain of hurricane lamps, hung on long cords so as to swing the better. One night a gale started at eight o'clock, and blew the hurricane lamps down or out—not all of them out. In the morning there was not a blade of clover to be seen, and some two thousand pink-foots flew slowly out to sea. No wonder that the Aberdeenshire County Council deprives geese with such appetites of the protection accorded to other migrants.

WHITE-FRONTED GOOSE [*Anser albifrons*]

This is a winter visitor, but of local distribution. Hawker has an amusing passage describing the first visit of White-fronts to the neighbourhood which he has made so familiar to the readers of his *Instructions to Young Sportsmen* and his *Diaries*. He says that these geese were quite unknown to the punt-gunners of the Hampshire coast until 1830, and that in that year they were "more or less dispersed over other parts of Great Britain":

"One Sunday morning, when birds really appear to know their day of safety, about eighty of them pitched in a field close to the village of Milford; which is literally a garrison of popgunners. Three at a shot were killed with a mere popgun —and by a tailor too ! Our friend Snip, feeling himself a privileged man where a *goose* was concerned, and having, no

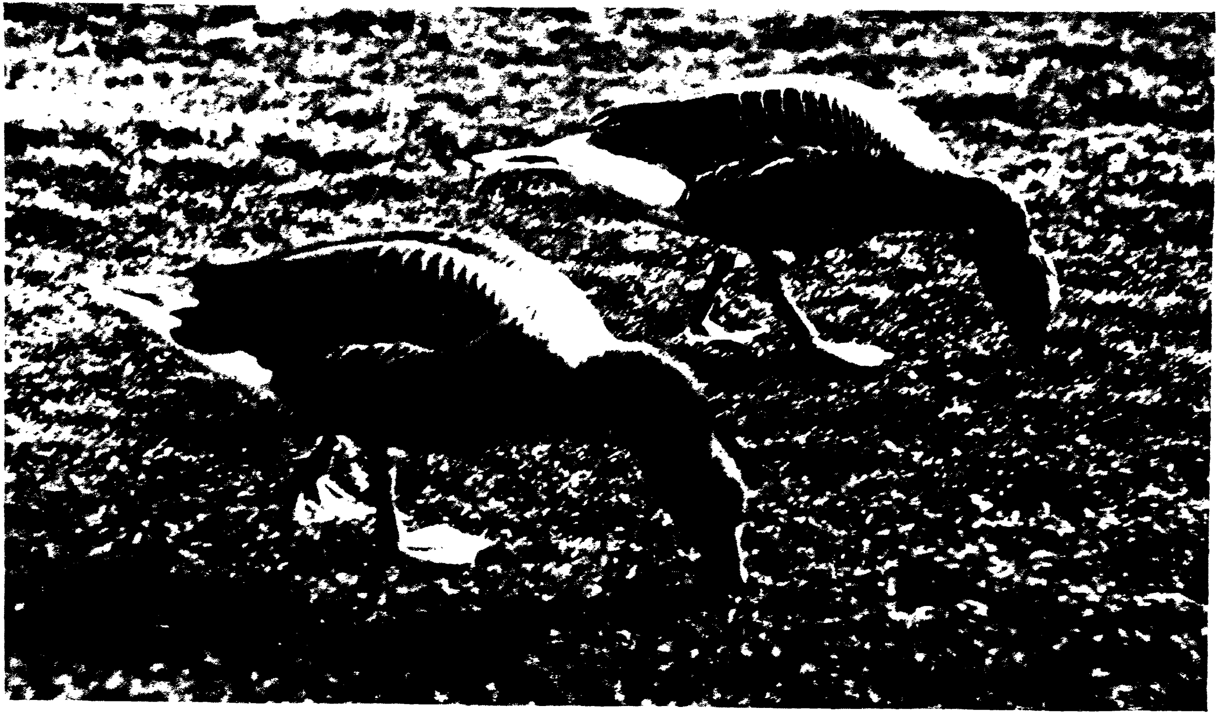


Plate 24

OUT ON THE GRASS: GREY-LAG GEESE.

doubt, seen on the livery buttons (and had construed to him) the motto of 'carpe diem,' had a fair 'set-off' against his transgression and breach of game-laws: and all ended well, as he shopped his game without getting shopped himself."

The bird gets its name of "white-front," *albifrons*, from its white forehead. The nail of its yellow beak is white, and its brown breast is patched and barred with black. Another name for the White-front is the Laughing goose—Buffon calls it *l'Oye rieuse*—and the Indians are said to imitate its cry by patting the mouth while repeating the syllable *Wah.* A gander weighs from 6½ to 7 pounds.

BARNACLE GOOSE [*Bernicla leucopsis*]

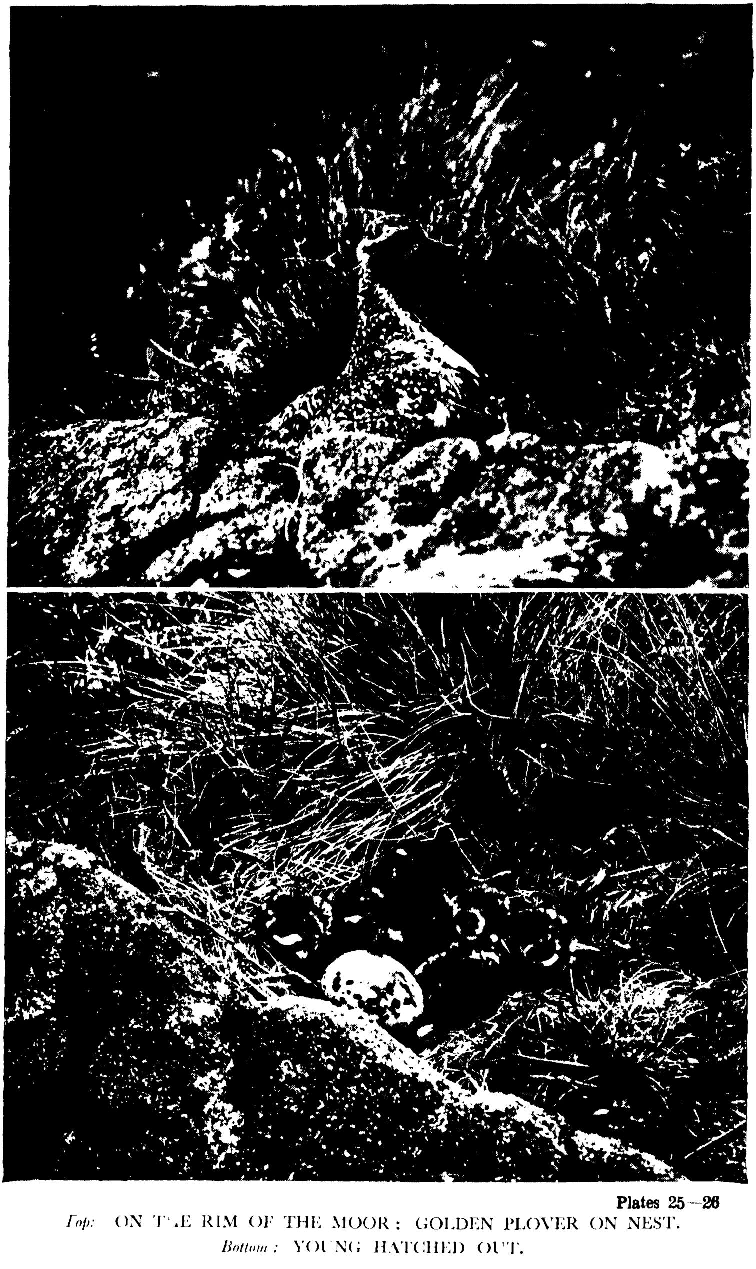
One of the mysteries of bird nomenclature is that this bird should somehow have created for itself the legend of its own creation. According to the indispensable Dr. Brewer, in the *Dictionary of Phrase and Fable*, the Barnacle owes its name to a tissue of blunders. The Scotch name for the goose is "brenclake," and the Latin name for a small limpet is *pernacula.* Each name became corrupted into "barnacle," and legend then proceeded to identify the existence of the two, with a tale that the goose was the offspring of the limpet. So that Gerard could write, in 1636, of "broken pieces of old ships on which is found certain spume or froth, which in time breedeth into shells, and the fish which is hatched therefrom is in shape and habit like a bird."

And a very fine bird it is, handsome in its black and white plumage, and carrying its body nobly above its long, strong tarsi. It was greatly admired by Macgillivray for its flight, its voice, and its carriage on the water and ashore. Weight 5 to 5¾ pounds.

BRENT GOOSE [*Bernicla brenta*]

"Brent" is "burnt," from the colour of its dorsal plumage, which resembles charred wood. This is a regular winter visitant, commoner on our eastern shores than in the west. It is the Rut-goose—that is, Root-goose—of the old writers, and gets the name from its habit of feeding on the roots of the grass-wrack, *Zostera marina.* Harting mentions that in the stomach of one which was shot on the Yorkshire coast were found specimens of a shell, *Crenella faber*, the only known locality for which is the Sea of Ochotsk.

It is the smallest of the geese that visit us in winter, seldom weighing more than 3½ pounds.



Plates 25—26

Top: ON THE RIM OF THE MOOR: GOLDEN PLOVER ON NEST.

Bottom: YOUNG HATCHED OUT.

CHAPTER EIGHTEEN

PLOVER

Golden Plover (*Charadrius pluvialis*); Green Plover (*Vanellus vulgaris*).

GOLDEN PLOVER [*Charadrius pluvialis*]

NONE of our British birds, I think, changes its appearance and habits more completely than does the Golden Plover in summer, autumn and spring. Those of us who shoot over Scottish moors in August see him first, perhaps, as a weak-flying, gentle bird, flitting from stone to stone with a thin piping cry, an unworthy mark for the gun. Comes October, and Golden Plover swoop and soar in flocks, light brown birds spotted with yellow, and with the under-parts dull white, tinged with yellow-brown on the breast. And then, early in the spring, the birds put on their breeding dress. The crown of the head, the cheeks and the whole of the under-parts turn black; on the forehead, under the crown, which is spotted with yellow, is a white band, and a white band separates the black under-parts from the neck and flanks. The cock and the hen are almost alike in plumage, but the black of the hen is not quite so complete as that of the cock. And the cock courts the hen. I know no more lovely sight of the Highlands in March and April than Golden Plover poising and tumbling above the moor, as I have seen them when Deeside was under snow, and as I have heard their voices in the wind over the hill.

The Golden Plover is slightly smaller than the Green, and its egg is slightly larger. The nest is a mere scrape or hollow, thinly lined with bents, and the eggs are of the same type as the Green Plover's, though brighter in the brown ground-colour, and not quite so pointed. In addition to the sweet calls of the bird in courtship, it has a clear, musical whistle, which may be heard from birds flying at a considerable distance.

GREEN PLOVER [*Vanellus vulgaris*]

So much misapprehension seems to exist as to the provisions of the Act of 1928, which made it illegal to sell "plovers' eggs," that it may be useful to quote for reference that part of the first section which refers to the sale of the bird and its eggs. The first clause begins as follows:

> "It shall not be lawful for any person—
>
> (*a*) during any time between the first day of March and the thirty-first day of August to sell any lapwing for human consumption, or to have any lapwing in his possession for the purpose of sale for human consumption; or
>
> (*b*) to sell for human consumption, or to have in his possession for the purpose of sale for human consumption, any egg of the lapwing."

It is sometimes supposed that the Protection of Lapwings Act forbids the shooting of Green Plover. That is not so; there is nothing in the Act as to killing or taking, and unless the Green Plover is specifically protected under the schedule of a County Council, as is the case in many counties in Scotland, it may be shot as may other birds for the table.

Until the passing of the Act of 1928, the eggs of the Green Plover were more familiar to many people than the bird itself. The bird was specially protected, of course, because of its services to the farmer in its destruction of wireworms and other insect pests. It would be interesting to know whether the special protection of the bird or its eggs has led to any increase in its numbers. As regards taking the eggs, many people argue that since the earliest laid clutches are often frosted and therefore infertile, or else because of their exposed position are taken by crows, the bird gets its best chance if the first clutch is deliberately gathered for food, so that the second lot of eggs are laid when the herbage is higher and the nest is less easily seen.

However that may be, the Protection of Lapwings Act is part of the law of the land. And though the bird may find its way into a mixed or wildfowler's bag, it can only be called a game bird by courtesy, and affords indifferent shooting.

Plates 27—28

Top : "IN THE SPRING THE WANTON LAPWING GETS HIMSELF ANOTHER CREST."

Bottom : SHINGLE AND MARSH : RINGED PLOVER FEEDING.

CHAPTER NINETEEN

WOODPIGEON [*Columba palumbus*]

CAN we call the woodpigeon a game bird? Not in law, and perhaps not by courtesy, but in character. It is a bird which stands high in the esteem of those who shoot, for its wariness, its cunning, the speed of its wings, and the height at which it flies. A woodpigeon coming in to roost will circle round once or twice before alighting; if you flush it from a tree it will fly out on the side furthest from you, and a bird flying overhead seems to jink at a pointed gun. Apart from its caution, its main characteristic is its voracity. Its appetite is almost incredible. Harting in his *British Birds* gives the following contents of crops noted at different times in the *Field*, mostly between September 1st and February 1st:

(1) 26 acorns and nearly 100 ivy-berries; (2) 33 acorns and 44 beechmast; (3) 65 beans; (4) 76 beans; (5) 87 beans; (6) 75 acorns; (7) 139 beech-nuts; a few grains of wheat, and a small white slug, *Limax agrestis*; (8) 46 horse-beans, as many field peas, and a few elm buds; (9) 1,840 green seed-pods with calyx attached of a speedwell, *Veronica Buxbaumii*; (10) 13 shells of a snail, *Helix caperata.*

But even these crops hold less than two which were examined by the late W. B. Tegetmeier, who in one bird found 198 beans and a dozen small snails, and in another 190 small snails, 25 grains of barley and 12 of wheat; while Mr. F. W. Frohawk, another contributor of notes to the *Field*, once shot a pigeon of which the crop contained 370 grains and a great number of husks of wheat, 4 seed-pods (full) of the dog-violet, 6 peas and half a pea-pod, 9 pieces of clover leaves, 1 seed, 1 small stone, 4 snails, *Helix caperata*, and 1 parasitical fly, *Ornithomyia avicularia.* And the record quantity contained in a crop, so far as corn is concerned, is mentioned in *The Birds of the British Isles and their Eggs*, by the late T. A. Coward —838 grains.

No wonder that such a bird is regarded as a pest by the farmer. In addition to food which is of no value, such as acorns and berries, it devours turnip-tops, kale, brussels sprouts, trefoil—almost anything that is green in winter. And it is in winter, of course, that woodpigeons do most damage, when our home-bred birds are joined by foreign immigrants, stock doves as well as woodpigeons, and when a field may be eaten to brown soil in a few hours.

When the foreign immigrations are exceptionally large, disease occasionally breaks out among the flocks. Gamekeepers used to call this epidemic "acorn disease" or "beechmast disease," and thought that the disease was caused by surfeit. But it is in fact a disease of overcrowding; the foreign pigeons come to us in hordes because their own food supply has ceased with hard weather; they roost in thousands in our woods, and if disease breaks out it spreads rapidly. The common disease is a form of diphtheritic roup; the bird's mouth and throat fill with a thick yellow mucus; it cannot feed, mopes and dies. In a year when disease is rampant, the birds fall dead from their perches in the night, and the wise keeper burns instead of burying their bodies.

It is the foreign pigeons which are the real marauders. Our own, doubtless, are not blameless, but in the breeding season in spring they repay for some of the damage they do in autumn and winter, for they devour quantities of noxious caterpillars, in particular those of the Dotted Border, *Hybernia marginaria*, the Mottled Umber, *Hybernia defoliaria*, and the small green moth that is commoner than either, *Tortrix viridana*, these three being the species that strip our oaks in May.

But apart from its use to the farmer and the forester, as a swallower of countless grubs, the woodpigeon deserves and gets the affection of the countryman for the beauty of its flight and its voice. The nuptial flight of the bird, which you may see on any warm day from December onwards, is one of the happiest sights of all the English woods. The bird flies up with three beats of the wing and glides down with wings level; up again, down again, in sheer delight of motion. And it is on those warm days of winter, when the year is turning and spring moves in the soil, that we listen with new pleasure to the monotone of the call from the ivy tree, *Tak' two coos, tak' two*. That is indeed a lovely song, belonging to the best of the countryside.

The woodpigeon builds a thin, clumsy nest of sticks, almost

Plates 29—30

Left : A FLIMSY STRUCTURE : THE WOODPIGEON'S NEST.
Right : HATCHED OUT : YOUNG WOODPIGEON.

anywhere in a tree, and lays two pure white glossy eggs. And it sets us a problem in so doing. For the rule is that white eggs are only laid by birds which nest in holes—owls, kingfishers, woodpeckers, sandmartins and so on. And two of the woodpigeon's near relations, the stock dove and the rock dove, do breed in holes and lay white eggs as we should expect; while the woodpigeon and its other relation the turtle dove make nests in trees and lay white eggs bare to the sky. What is the reason for the exception to the general rule? We are watching, surely, part of an immensely lengthy process —a stage in the development of habit which has been going on for æons and will go on for æons still. There was a time, doubtless, when all birds laid white eggs, as did the reptiles from whom they were descended, and as reptiles still do. Then came a time when certain birds left the holes and began to lay their eggs in the open, and those birds were fittest to survive which, by one of Nature's hidden processes, learnt to lay coloured eggs, pale blue or green at first perhaps, and later blue or green mottled with brown, and later still, it may be, brown marked with darker brown, to suit the earth on which the nest was scraped. And the woodpigeon and turtle dove, it may be, have been the last to come out into the open, and have left their cousins the stock dove and rock dove behind them. Not long before the woodpigeon in its change of habits was the starling, perhaps, which still nests almost in the dark, and still drops a blue egg casually on the garden lawn, as do the song thrush and the blackbird, which have developed the colouring of their eggs to a stage further. And in some distant æon—who is to doubt it?—there will be woodpigeons laying eggs as blue as the starling's, and turtle doves, it may be, eggs as pale green and brown as those of the blackbird or the ring ousel.

There are three other names for the woodpigeon: the ring dove, from the white ring—it is really a patch—on its neck; the cushat; and the queest or quist. The Oxford English Dictionary, an authority not to be disputed, tells us that queest is a form of cushat, and that the etymology of cushat is unknown. For myself, I should have guessed that, like turtle dove, the Latin *turtur*, the name cushat was onomatopœic, from its coo.

CHAPTER TWENTY

THE COMMON HARE [*Lepus timidus*]

"I like the hunting of the hare
Better than that of the fox"—

SO wrote Wilfrid Scawen Blunt, in one of the simplest and pleasantest of poems of life in the country, and in his liking he echoed the judgment of one of the greatest of authors of books of sport, Edward, Duke of York, whose treatise *The Master of Game* is in turn largely a transcript of Count Gaston de Foix's *La Chasse*, perhaps more familiarly known as *Gaston Phœbus*. In *The Master of Game* the chapter on "The Hare and her Nature" has precedence in sequence over the chapter on "The Hart and his Nature," and the hart has not the praise bestowed on the hare:

"It is to be known that the hare is king of all venery, for all blowing and the fair terms of hunting cometh of the seeking and the finding of the hare. For certain it is the most marvellous beast that is."

And certain it is, if we accept all that the old writers tell us about it. Pliny writes of the fable that "hares are of many and various sexes." Other writers, such as Sir Thomas Browne, limit the number of sexes to two; Sir Thomas, in his *Inquiries into Vulgar and Common Errors*, tells us that the sex of the hare is interchangeable, and that the buck will occasionally give birth to young. The same belief lies in the making of some of the oldest of the Welsh laws, in which it is laid down that the hare is incapable of legal valuation, since it was in one month male and in another female. Hares are supposed to change their sex every month or every year, and to be the companions of witches, which took their shape. Thomas Pennant, writing towards the latter part of the eighteenth century of a tour in Wales, says that in Montgomeryshire hares were called St. Monacella's lambs, and that up to recent times no one would kill them. "When a hare was pursued by dogs it was believed that if anyone cried 'God and St. Monacella be with thee!' it was sure to escape." In short, it was a magical animal, as it still is today. With its speed, its grace, the beauty of its movement, its cleanliness and its wild eyes, it is of game beasts the most bewitching creature.

And how to hunt the hare, according to *The Master of Game*? "It is a fair thing to slay her with strength of hounds, for she runneth strong and cunningly. A hare shall last well four miles or more or less, if she be an old male hare." And there were certain phrases of custom which were to be used in taking out hounds after her. When the huntsman lets his hounds out of kennel he is to say loudly, *Ho ho arere*!—"Back there" (from the French *arrière*)—or they may come out too hastily. When he comes to the field and uncouples his hounds he is to blow three motes on his horn and speak twice to them: *Hors de couple, avaunt cy, avaunt!*—"Out of couples, forward there, forward"—and soon again *Sa cy avaunt, sa cy avaunt so how*! And if they draw away from him faster than he wishes, he shall call to them, *How amy—how amy*, and then *Swef, mon amy, swef*—"Gently, my friend, gently." And if one of his hounds owns to the scent, he shall say, *Oyez a Beaumont le vaillant!* or whatever the hound's name may be. And if the hounds find where she has sat or fed, then he is to cry, *La douce, la il a este*—"Softly, there he has been"—and follow with *So howe*! with a high voice. If they then do not hunt where he means, he lays them on where he wishes with *Illeoqs, illeoqs*—"Here, in this place." And so we follow him through field and wood, with hunting cries which surely would be understood by hounds today—*Ha cy douce cy et venuz arere!—La douce amy, il ad est illeoqs!—So how illeoqs cy douce, cy vaillant!—La douce how-here, how-here, how-here, how-here, douce how-here, how-here!—Oyez! a Beaumont, le vaillant, oyez, oyez, oyez, who-bo-howe!* If hounds should turn to chase sheep or other beasts, he must "rate them sorely and dismount and take them up and lash them well, saying loud, *Ware ware ha ha ware!*"

And the end? When she fails at last and she is "bitten by hounds":

"Whoso is nearest should start to take her whole from them, and hold her in his one hand over his head high, and blow the death that men may gather thither, and when they be come, then should she be stripped, all save the head, and the gall and the paunch cast away, and the remnant should be laid on a great staff or on a board, whoso hath it, or on the earth, and then it should be chopped as small as it can be, so that it hangs together; and when it is so done then should one of the berners take it up with the head and hold it as high as he is able in his hands, and then whoso is most master, blow the death, and anon as he beginneth every man help and holloa. And when the hounds have bayed as long as is wished by the aforesaid most master, then should the berner pull as high as he can every piece from the other and cast to every hound his reward. And then should the most master blow a mote and stroke, if so be that he thinks that the hounds have done enough, and else he should rest awhile, if the hounds be hot, till they be cooled, and then led to the water to lap. And then if he wish blow three motes and uncouple and speak and so do as before is said."

So much for the hunting of the hare in the fourteenth century—the same animal praised by Wilfrid Scawen Blunt five hundred years later.

The colour of the hare's fur is usually sandy, sparsely streaked with long black hairs, which are set closer together along the back, almost like a stripe. The top of the tail is also black, and so are the tips of the ears. This sandy coat tends to become greyer in winter. The under-parts are pure white. As to varieties, the hare is not subject to much change in colour, though grey, yellow, pied, white and even black hares have been shot.

As to weight, a full-grown hare ranges between 7 and 9 pounds. Norfolk hares, and those of East Anglia generally, are heavier than others, and hares have been reported in the *Field* on several occasions weighing over 11 pounds. Among the heaviest on record which have been chronicled in the *Field* appear to be two, killed at Sutton-on-Hull among seventeen in one day by Mr. C. Dearing, weighing 13 pounds 4 ounces and 13 pounds 8 ounces; one killed by Mr. Robert Henderson at Longwitten in Northumberland, which weighed 13 pounds 4 ounces; and two hares weighed by Mr. Harper of Louth in Lincolnshire, which weighed 13 and 14 pounds apiece. The *Preston Guardian* has also recorded, Mr. Hugh Gladstone tells us in his valuable book *Record Bags and Shooting Records*, that at a rent dinner of the tenantry of the Misses ffarington, ladies of the manor of Leyland, held at the Castle Hotel, Leyland, Lancashire, the menu provided a hare which had been killed at Worden, and weighed 13 pounds 14 ounces.

How strangely different may be the outlook of sportsmen of succeeding generations on the status of this or that animal! I find in *The Gun at Home and Abroad*, for example, which was published in 1913, the following lament from my old friend James Harting. At the time of writing he was over seventy: he was born in 1841, and had seen the passing of the Ground Game Act in 1880—a measure which so conservative a sportsman honestly believed, as did many country gentlemen of that date, to be the beginning of the end. Thus he deplores the degenerate years:

"The mischievous operation of the Ground Game Act during the past thirty years and the neglect of the Legislature to provide a reasonable close time for hares have caused a woeful diminution of this most useful animal. It is no exaggeration to say that in some counties, more particularly in the south of England, the number of hares now to be met with is about one-fifth of what it was before the Ground Game Act was passed in 1880. . . . The champions of sport and the advocates of humanity and common sense have alike failed to convince their unreasonable opponents of the wisdom of enforcing a close time. One would have supposed that the vested interests of masters of harriers, owners of greyhounds, game preservers and game shooters, to say nothing of game dealers and game consumers, would have long since operated to secure the passing of such a Bill as is needed."

Is it not pleasantly old-fashioned? "This most useful animal!" Useful for sport, presumably. And the farmers' crops, and for that matter the carnations in my own garden? The very *raison d'être* of the Ground Game Act, and the necessity for subordinating the interests of hunting and shooting to those of our greatest English industry, vanish from consideration. We are fifty years older, and perhaps fifty years wiser than some of us were in the 'eighties.

For my part, as I have written before now, I wish that hares were rarer animals. No more graceful creature moves in English fields; but hares unhappily do not suit with harvests. And to see them as they flock over the Oxfordshire downs, or as you may watch the whole plain in Wiltshire moving with them, is to realize that in those places the only useful hare is a dead hare. Who would shoot a hare unless he must? But, unfortunately, must is often the only word.

Hares breed at ten months old, and the period of gestation is said by some writers to be thirty days, by others to be six weeks. It is difficult to know how these conclusions are arrived at. Personally, I prefer the old country proverb "Hare and mare together a year," and we know that a mare goes forty-eight weeks. What is undoubted is that in mild seasons hares may breed in any month in the year. From this it would seem to follow that there is no regular rule that can be laid down as to the number of litters that a hare produces in a year. The most usual months for pairing are February and March, and it is in March that the buck hares box with each other—one of the oddest sights of the English countryside. But the proverb "as mad as a March hare" probably owes its origin to the behaviour of the buck courting the doe, when its movements are ludicrous. I have never seen a buck hare damaged in a bout of boxing, but a writer in the *Transactions of the Cardiff Naturalists' Society*, Mr. Drane, states that he has seen a buck hare kill another with a blow from the hind foot.

Three to five is the usual number of leverets in a litter, and the mother hare is not particular as to the spot she chooses for the birth of her young. The first litter which I ever saw was in the short grass of a headland jutting out from the coast of Somersetshire. I was playing in a foursome of golf, and one of my opponents drove a ball from the tee down the fairway. His partner followed up to take his shot, and called to us; the ball had rolled to rest against the bodies of four newly-born leverets. Somebody went back to the club-house for a camera, and in due course we played on. No sooner were we out of sight, the green-keeper told us afterwards, than the mother hare came out from a hedge and carried her babies one by one in her mouth to a hiding-place a quarter of a mile away.

That was the first time I set eyes on what I think is the most lovely little creature in the world. Unlike baby rabbits, which are born blind and pink and naked, leverets are born with a coat of grey fur and with blue eyes wide open. Their ears are broad and long, and the silky tiny creatures will sit in the palm of your hand apparently without fear. Of late years I have had a good many opportunities of picking them up, for year after year a mother hare selects my garden for her nursery, and is indifferent as to her quarters, choosing a wild corner where there is bracken, or the herbaceous border, or, as on one occasion, a bed of roses. And she is always close by somewhere when I pick up her babies, though I do not see her; if I leave the place and come back an hour or so later, she has taken her nurslings away. Summer after summer the same thing happens; I see a lean creature slinking through the orchard, and I know that somewhere behind her she has left a family. She was early in the mild winter of 1934-5: I found a fortnight-old leveret on January 31st.

I have never kept a tame hare, and indeed a tame hare in a rock garden would not be ornamental. But hares must differ very considerably in their tempers, or their affection for their owners. Everyone knows Cowper's lines on a hare which he kept for ten years:

"The surliest of his kind,
Who, nursed with tender care,
And to domestic bounds confined,
Was still a wild jack hare.

"Though duly from my hand he took
His pittance every night,
He did it with a jealous look,
And when he could would bite."

This was the experience, too, of a correspondent, V.T., of the *Field*, in May, 1902. His keeper had brought him two leverets which were only just able to feed themselves. They had been found in a field of long clover, and he decided to try to tame them:

"I put them into a low, wide tin bath, wired all round and over the top. They were at first terrified, and sat huddled together for the remainder of the day and night, refusing food of any sort. In the early hours of the morning I succeeded in feeding them with some warm milk—and again later—till, by degrees, they began to nibble clover. I tamed them by slow stages, till they would eat from my hand and let me nurse them. But as their fear of me gradually diminished I was amazed to find how forcibly and persistently they were prepared to resent interference. They flew at me, bit and scratched me, making a most peculiar hissing sound, and so ferocious and hurtful were their attacks that I was forced to defend myself with a pair of thick gloves.

"Then followed a series of boxing matches, the assaults upon me frequently lasting several minutes, with periodical rests, when they would retreat to a corner, regain their wind, and attack me again more savagely than before. When completely beaten, they would let me stroke them and lick my hand as usual, and be friends again."

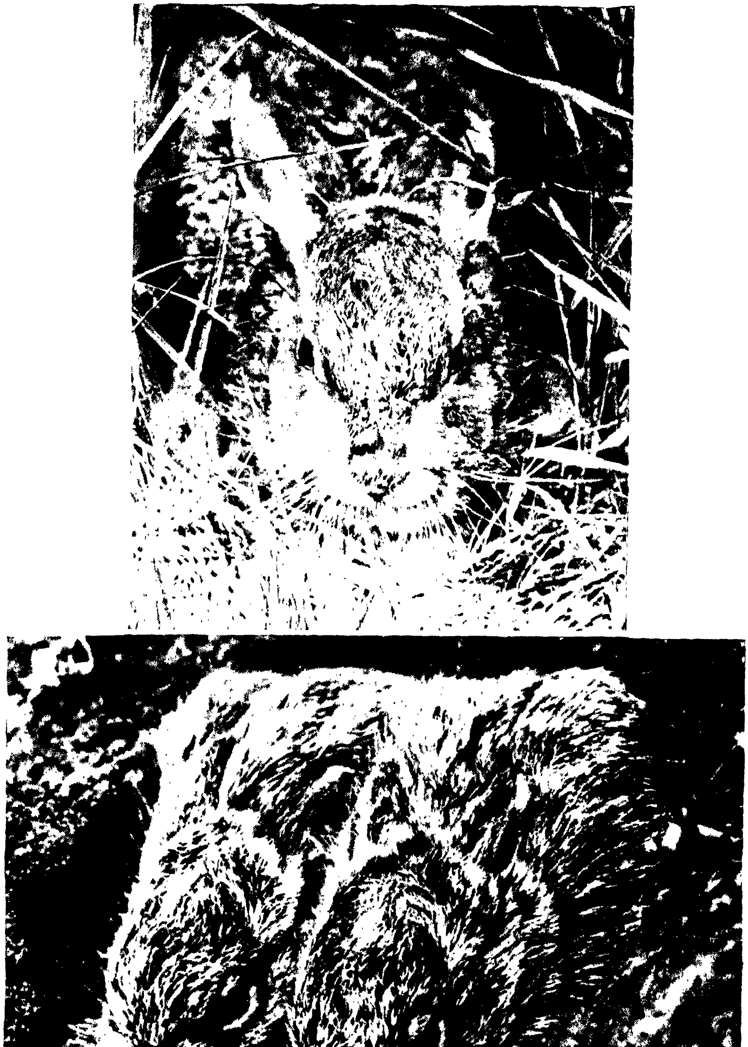
But this was apparently only a phase. When they grew older, their manners towards V.T. changed:

"One of these hares is now a most engaging animal, knows me perfectly, and will jump up on my knee, climb up and kiss me when told, sit up and beg, jump through a hoop, and shake hands, always giving me the right paw. It will also seek its food when I hide it, and does all in its power to show its affection for me. It lives in the house, is loose all day, and thoroughly enjoys a good roll on the rug, where it frequently lies stretched full length before the fire. It also plays with two retriever dogs, of whom it has no fear whatever, and often lies between them when asleep."

But even this hare does not provide so delightful a portrait as does a hare kept by Mr. Drane of Cardiff, whose account of a battle between bucks I have already mentioned. Mr. Drane refers to the debated point of the reasons which induce a hare occasionally to go to ground, or actually, as in certain places where hares are coursed in Kent, spend part of its life in specially made earths. He writes of his tame hare:

"It likes to be with me, and delights to jump upon the bed, over and under, and upon it again and again, and I have become so fond of it and accustomed to it that it does not disturb me at all. It will almost every morning, when its period of nocturnal activity ceases, get under the bedclothes to enjoy the warmth, and then it will wake me by burrowing furiously; it tears away at imaginary excavations, and throws out imaginary earth precisely as a rabbit does in its real work. In these imaginary burrowings it meets with imaginary roots or other obstructions, which it bites through. That in prosaic English means just so many holes in the sheet, but the creature is so lovable that I would just as soon have half a hare as a whole sheet. This burrowing seems to me an instinctive harking back to that remote period in this creature's evolution when it lived in holes, as its congeners do."

It is a point in favour of this argument that today rabbits



Plates

Top: PROMISE OF MARCH: HARE IN FORM.
Bottom: A FEW DAYS OLD: BABY LEVERETS.

in Australia are learning to do without burrows and to make nests in grass in the open.

Hares are good swimmers and I think enjoy swimming. Once when I was fishing a lake, as they call a large pond in Sussex, I saw a hare come down to the bank, step in and swim unconcernedly to the other side. It was not pressed in any way, and there was an easy way round the lake only a few yards distant. Hares will cross water to get at food. The Rev. E. Adrian Woodruff-Peacock in one of the Rural Studies series, *The Cultivation of the Common Hare*, gives an instance of hares crossing a river. Poachers, he says, know only too well the habits of hares:

"They thread hedges, cross highways, swim wide rivers and easily jump smaller streams up to 25 feet in width. Nearly thirty years ago these facts were brought forcibly home to me by a field of carrots on the west side of the River Trent. On that side of the river there were no hares, but the east side was strictly preserved and they were in plenty. The carrots acted as a perfect lure, during an open winter, to attract the hares across the stream, where the river was a trifle over 200 yards wide. They came over in the failing light, and returned about dawn."

I wonder what is the exact evidence for the claim that a hare can jump a stream 25 feet wide. There would seem to be no need for a hare to do so, unless it were being hunted, and poachers snare hares rather than course them. But the stride of a hare is immensely long, even when not pressed. My sister once at Sennen in Cornwall saw a hare which had been startled, but was not being hunted, cantering along the sea-shore on the edge of the tide. She was able to measure in the wet sand the distance between the tracks of the hind feet, and found the interval to be 11 feet 3 inches.

A hare can be ungainly in its movements, and to see it slowly moving about a root-field, for instance, is to gain no idea of the beauty of its movement when it is running fast or jumping. Mr. Drane has a delightful passage in which he describes various movements of a hare, observed close at hand:

"It will romp and roll itself with infinite delight and sprightliness on a clean white counterpane or tablecloth. Sometimes it will sit with its hind legs extended forward so that the hind feet are in advance of the nose, and the fore feet under the nose, when it looks as if it had four fore-feet and no hind ones. Again, it will draw back its hind feet and extend its fore ones to their fullest length, and then its head seems to rise from the centre of the back. But perhaps the prettiest thing of all is to see it clean its ears. It puts its head on one side, pulls down its ear, and passes its two paws over it again and again, like a lady dressing her hair. It can stand quite perpendicular, without support, upon its hind toes, and even advance some steps in that position, balancing itself by holding out its fore limbs horizontally. Its leaps are remarkable for their height, grace and agility. It habitually overleaps its object, and comes down upon it with a curved descent, as beautifully as an antelope."

As to the hare's cry or call, everyone who has seen hares shot knows the creature's scream, one of the most dreadful sounds any man can hear. Otherwise the hare is a silent animal, except for a curious sort of grunt, something like the word "aunt," which is uttered open-mouthed and is a cry of fear or warning. Another sound is a call, either to a mate or to young. This is made with closed lips, and is exactly like the call, or grunt, which is familiar to anyone who has kept a Belgian hare in a hutch. Mr. Drane describes this call as made to a leveret by its mother:

"I had two hares in captivity which twice produced young. I gave them the run of the house at night; my bedroom opens on the corridor, and the door is never shut at night. The parent hares held high jinks; upstairs and down, along the corridor, in and out of my bedroom. The little ones could not keep pace at all with them, and would lie *perdus*. Then in the unbroken silence of the night, and within walls which would help to convey the slightest sound, I have heard the mother hare call its young by a whispered 'ōont,' and have heard the response of the soft tread of the little one along the waxed floor, very different from the distinct sound made by the long, hard nails of the parents."

What is a hare-pipe? In the reign of Richard II a law was passed (13 Rich. II, c. 13) which prohibited the use by unauthorized persons of dogs for hunting, ferrets, nets, hare-pipes or other engines to take or destroy hares. And in the reign of James I it was enacted (1 Jac. I, c. 27) that any person who should at any time take or destroy any hares with hare-pipes, cords or any such instruments or other instruments or other engines should forfeit for every hare so taken or destroyed twenty shillings. In later reigns, those of Charles II and William and Mary, the use of hare-pipes continued to be prohibited, and the word only dropped out of the statute-book in 1831, when many of the old game laws were repealed and their place was taken by what is known as the Game Act—the foundation of the Game Laws as they exist today.

By the context, then, a hare-pipe surely must have been some form of net or snare, comparable to the "pipe" of the wild-fowl decoy, which was a long net fixed on arches, with a broad mouth narrowing to a *cul de sac*, up to which the duck were driven so that they could be taken out and be killed. A hare-pipe, surely, must have been a device which was placed in a "smeuse," or a place through which hares are observed to pass—a gap in a fence or gate, in fact—and placed in the old days just as a poacher places a snare for a hare today.

What else could it have been? There seems no need for any further explanation. But Harting, in *The Gun at Home and Abroad*, does not think that the question is so simple, and finds another answer to it. There are illustrations in an old French book, *La Chasse Moderne*, by Gaston Legrand, of a call which was used by poachers to attract hares. With it the call of the hare in breeding time could be imitated, and Harting adds that "French poachers at the present day call the buck hares in the month of March by imitating with an ivy leaf the cry of the doe."

But I cannot find that the word "pipe" is used by any English writer for any sort of mouth-call. And Harting cites in aid of his theory that a hare-pipe may have been one of these mouth-calls the following passage from *Travels in Asia Minor and Greece* (1817), by Dr. Richard Chandler, which, he says, "will explain the meaning of the hare-pipe":

"Hares are exceedingly numerous. Calling is practised in still weather from the latter end of May to about the middle of August. Three or four men in a company stand silent and concealed in a thicket, with guns pointed in different directions. When all are ready, the caller applies two of his fingers to his lips, and sucking them at first slowly and then faster, produces a squealing sound, when the hares within hearing come to the spot. In this manner many are slaughtered in a day. One of my companions, with Lombardi, a Turk and a Greek or two, who were adepts, killed eleven."

But that passage, surely, if it proves anything, proves that the word "hare-pipe" was never used in England for an instrument intended to call hares. You do not make laws against sucking fingers in England, any more than you make them in France against blowing on an ivy leaf. Fingers and ivy leaves are not engines. It is the word "pipe" which has led to all this March hare chasing, and there is no need for "pipe" to carry any other meaning than some form of net, which is its meaning in the art of the decoy-man.

Hares are voracious creatures, and even a small population can do much harm to growing crops—young corn, turnips, mangolds and swedes. One of their favourite foods is described in the *Country Life* volume on *Shooting* by that charming writer, the late Charles Cornish:

"A curious fact in hare life is their exceeding fondness for sea-beaches, especially those on which certain sea-plants grow. The favourite plant of all is a somewhat rare one, the sea-pea (*Lathyrus maritima*), which grows on the shingles, and especially on pebble banks like that at Orford (which is nine miles long), and on the Chesil beach, and on others in Sussex and Devon. This pea sends down its root many feet into the shingles, and spreads like a mat of dark-green salty leaves over yards of stones. On Chesil beach the hares come down from the hills to eat this plant, and below Orford they actually swim the broad tidal river to get it. Thence they travel down the beach, and so reach the mainland near Aldeburgh. The only other vegetation is a thin dry grass in places, and sea-campion. Yet forty hares may be shot in a day, and often are, on this hard bed of stones, in excellent condition."

And hares in a garden! In the kitchen garden they seem to prefer carrots, parsley and lettuce. In the flower garden carnations attract them, and so do wallflowers. And into both gardens they will go, no matter what precautions you may try to take. It is impossible in these days of motor-cars coming and going at all hours of the day and night to keep the gate of the carriage drive always shut, and that entrance, by the main drive, is one way in. Another is even simpler. A short time ago, coming back home at night, I saw a hare in the road not far from the drive gate. We turned the car, and tried to chase the hare, by means of the headlights, down the road to an open field. When we had chased it nearly 200 yards down the road, it turned to the side, and jumped a 3-foot wire fence into the garden.

CHAPTER TWENTY-ONE

THE MOUNTAIN HARE [*Lepus variabilis*]

THIS is the name of the animal sometimes called the Scottish, the blue, and the white hare. *Variabilis* refers to its seasonal change from grey in summer to its winter coat of white.

Compared with the common hare, the mountain hare is a poor and weak creature. The common hare is a strong animal whose long hind legs are adapted for fast movement and free galloping. The mountain hare, with its smaller head and ears, slighter build of body and shorter hind legs, is more like a gaunt cat than a muscular beast able to stand up before a pack of hounds. A common hare springs up and bounds off at full speed. A mountain hare scuffles away when it must, and stops when it can.

A mountain hare, too, weighs much less than a common hare. Five to 6 pounds is the usual weight, and an 8 pound hare is a very large one. Many that are bagged in a day's shooting weigh little more than 4 pounds.

It was for a long time disputed whether the mountain and common hares would interbreed. Harting proved that they did so in the *Field* as long ago as August 29th, 1891, and J. G. Millais subsequently corroborated him by observations he made of hybrids in Scotland in the autumn of 1895, when, after a very cold winter, the mountain hares had come down and remained in the rough ground at river level, where they intermixed with common hares.

Mountain hares change the colour of their coats gradually throughout the year. In the summer the fur is brownish grey, which changes to bluish grey in August, becoming paler as the autumn wears on, until in October white hairs begin to appear, and in winter the coat is pure white throughout.

Occasionally black mountain hares are shot. J. G. Millais, in *British Mammals*, mentions that one was killed at Braemar in 1901, and another at Langwell, Caithness, in 1902. On August 29th, 1933, two black mountain hares were shot by Mrs. Portal on Sciberscross, Sutherland; and a buff hare was seen on the same ground in September in 1933 and 1934, but was not shot. Millais had only known of one instance of a buff hare in Scotland.

There has long been a difference of opinion as to whether the mountain hare and the so-called Irish hare should be regarded as separate sub-species. At one time it was held by certain writers that this must be so, since the Irish hare did not turn white in winter. But it has been proved that it may do so and that it does; and Harting will not admit that two sub-species exist. He reasons that the slight differences of appearance between the mountain hare and the Irish hare "may be attributed to the milder Irish climate, and the modified conditions of life under which Irish hares have had to exist." Millais thinks that if we are to accept the Irish stoat and the various sub-species of *Mus sylvaticus* as localized forms, we ought to accord the same recognition to the Irish hare. "We must either accept these local races or fail to recognize them at all." I agree, and should urge that the difference in colour between the mountain hare, which is never brown, and the Irish hare, which is sometimes brown and sometimes buff, is sufficiently marked to warrant a sub-specific title, while I should also claim that there is a difference in the texture of the pelt of the mountain and the Irish hare, the latter being the coarser and stiffer.

An Irish hare may weigh 7 pounds or a little more, and does have been weighed in January which turned the scale at 9 and 9¼ pounds.

CHAPTER TWENTY-TWO

THE RABBIT [*Lepus cuniculus*]

RABBITS, writes Varro in that fascinating book of the country life of the Roman, *De Re Rustica*, are so called because they make burrows, *cuniculi*, underground in the fields, to hide themselves in. But that is not what the Latin Dictionary tells you. According to White and Riddle *cuniculus* is from a Spanish word (the modern Spanish for "rabbit" is *conejo*), of which the proper meaning is "rabbit," and the transferred meaning, from the burrowing of rabbits, "a subterranean passage, cave, canal, etc." In military language *cuniculus* is a mine. It is easy to see that Varro's reasoning is not so sound as that of the makers of the Latin Dictionary. You would not name an animal after a mine.

Rabbits differ from hares in structure and in habit. The rabbit has shorter ears than the hare, and shorter hind legs. Rabbits breed at the age of six months, while hares breed at ten months or a year. The doe's period of gestation is twenty-eight days, and she may have six litters in the year, each litter numbering from five to seven young. Rabbits born in February may have litters of their own in September, so that the possibilities of rapid increase in a rabbit population are considerable. Young rabbits are born naked and blind, and in a stop or nest made underground by the mother, instead of in the "form" chosen by the mother hare for her babies with their fur coats and open eyes. But young rabbits have occasionally been found in nests above ground, as, for instance, in country of which the soil is extremely stiff, and where the mother can find matted herbage into which she can tunnel. And it may sometimes have happened, in cases where a litter of young rabbits has been found in the open above ground, that the mother has moved them from their original nest owing to flooding. Like the hare, she carries her little ones in her mouth, one at a time.

Rabbits may vary occasionally in colour. Of course, in places where tame rabbits have been turned into the woods, as has happened here and there, you may expect anything in

Plates 33—34

Top: MOUNTAIN HARE IN WINTER COAT.

Bottom: MOVING OUT TO FEED: YOUNG WILD RABBIT.

the way of piebald and skewbald animals; I once stood outside a wood and saw rabbits advancing towards me, spotted, speckled, ring-straked and brown, pied and parti-coloured toy rodents at which no man should lift a gun; yet the keeper adjured those present to destroy the host of them. But rabbits may be naturally of other colours than the sandy grey familiar creatures with chestnut napes to their necks. Black rabbits and white rabbits can be just melanistic or albinistic; silver grey is locally not uncommon, and I know some rough ground on the banks of the Findhorn where you may shoot rabbits which are more yellow than sandy.

Few creatures are naturally more timid than the rabbit, but there are occasions when the weak suddenly become strong. As a rule, if a rabbit is chased by a stoat, it seems to become paralyzed with fear, and squats screaming. But in defence of its young it can display extraordinary courage. Stories of brave rabbit mothers have often appeared in the *Field*, and some of them have been collected by James Harting, who was the Natural History Editor of that paper for over fifty years. Here are three of them:

"One day in September, 1890, while Mr. Randolph, of Modbury, Wiltshire, was passing through a wood, he observed a weasel hunting a young rabbit about the size of a man's fist. He stood still to watch the result. The chase did not last long, for the young rabbit soon gave up, and the weasel killed it. An old rabbit, presumably the parent, suddenly dashed out upon the scene from a bank, and fairly 'went for' the weasel. The latter turned tail at once and abandoned his prey. But the old rabbit still continued to follow him with the greatest fury till she had driven him completely off the ground.

"On another occasion, in October, 1891, a gamekeeper in the service of Mr. Deacon, of Southborough, Tunbridge Wells, on going through a wood saw a stoat which had caught a young rabbit, playing with it as a cat does with a mouse, letting it go and then catching it again. Before the keeper could interfere, he saw a full-grown rabbit, probably the doe, rush out of some underwood close by, knock over the stoat, and carry off the young one in its mouth. The stoat on recovering itself followed through the underwood, but presently appeared in retreat pursued by a couple of rabbits."

The story which I like best, however, is of Rabbit *v.* Crow. This was in North Wales:

"A young rabbit had strayed a little too far from the mouth of the burrow, when a carrion crow suddenly alighted close to it, and in a series of hops gave chase, and was about to seize it. Suddenly from the mouth of the burrow an old rabbit came with a rush, and going full tilt at the crow, knocked it over before it could get out of the way. The discomfited bird, with a hoarse croak, scrambled on to its feet and hastily took to flight."

Although rabbits will defend their young fiercely in this way, and although they can bite sharply, it is not often that they use their teeth when handled, either when wounded or when taken out of a trap. Harting, in his monograph "The Rabbit," in the *Fur, Feather and Fin* series, says that in twenty-five years' experience, having shot and seen others shoot thousands of rabbits, he has never personally witnessed anything of the kind. He gives, however, three instances of wounded rabbits biting the person who picked them up, and quotes from a correspondent of the *Field*, Mr. J. Simpson, of Wortley, Yorkshire, to the effect that he has often been bitten by wild rabbits, but always when putting his hand near a nest of young. I myself have never been bitten by a rabbit, but I cannot think that it is a rare experience for keepers and others to be bitten. In the course of writing this page I went out and spoke to three gardeners, each of whom at one time in his life worked with gamekeepers. Each had been bitten; one as a young man, when ferreting; another several times, when taking rabbits out of nets, when ferreting in the winter-time; and the third, very badly bitten by a big old buck rabbit, which had frightened out of the hole the first ferret put in. He then put in the line ferret, which bustled about some time below ground, and then sent down a third ferret. Eventually he got hold of the rabbit, which made its teeth meet in the first finger of his right hand. His companion had to break the rabbit's neck before the teeth could be got out, "and I was sick and ill the whole of that day." It was more than twenty years ago, and he showed me the white scar.

Rabbits are sociable animals, and like to congregate in large colonies. There is no limit to the size of a bury where the rabbits are free to range and burrow as they please, and it would be difficult to calculate the depth to which the galleries of such a place extend. When the road was being widened in the neighbourhood of Esher in the summer of 1934, it was necessary to cut into a bank which at one time must have held a big tenantry of rabbits, and I noticed wide galleries 10 feet and more from the surface of the soil above. In Scotland, too, I know one or two buries which run into stony hillsides, and from which I can think of nothing short of a mine which would expel the inhabitants. It has always been a puzzle to me how the rabbits burrowing deep into high banks or hillsides move to the surface the tons of soil which they must scrape out. Presumably they shift it all with their hind feet backwards along the whole length of the existing galleries, and the process must be slow and gradual. But you can see, in looking at a rabbit-riddled hedgerow, that the soil moved in the making of a really big bury must change the whole contour of a hillside.

Personally, I detest the sight of hedge-banks holed by rabbits. The holes harbour rats, and the banks are spoiled as nesting-sites for partridges. And I like as little as the riddled banks the paths which the rabbits make through the grass or the crops of the fields which hedge-rows enclose. In fact, if it were possible to banish rabbits from farm land altogether, so that the Ground Game Act, except for hares, would become a dead letter, it would be of benefit to the whole countryside. Wherever rabbits go, they foul and destroy. They are dirty creatures, their buries and their bodies swarm with fleas, and though it has been claimed for them that they aim at cleanliness by depositing their droppings in or on chosen situations, such as ant-hills or tree stumps, they appear to frequent such places rather than merely resort to them, and one of their favourite choices of locality is the soil outside a burrow. They have but one virtue in the neighbourhood of human habitations: they can be amusing to watch. It is an interesting sight to see rabbits leaving cover to come out on, say, a grass field. They advance with great caution until they are sure that the coast is clear; if they are left long undisturbed you may watch the young ones run races and jump and skip, bucks chase does, unchased does wash their faces or lie full length in the warmth of the sun. But the main business is, of course, the meal of grass. Rabbit-cropped grass on downland makes some of the finest possible turf. If the meal is interrupted, if dog or man invade the scene, stamp goes every hind foot, and scut after scut shows its white signal as the feeding colony scampers home.

Rabbits have a certain value as a cheap and wholesome food, though not everyone would agree as to what the value may be; I can find none. But it is because they provide food, and are therefore marketable, that their existence is not only tolerated, but encouraged, in certain parts of the country. In the south-west of England, and in Pembrokeshire, rabbit trapping is a business. It is also a horror. The trapping is done with steel gins, which are set in holes, in the open, in hedge-banks, in fact anywhere, and which catch dogs, cats, foxhounds, pheasants, partridges, woodcock, even the tongues of cattle—besides, of course, rabbits, which scream. It is a hateful business, and every humane person must wish to end it. Unfortunately it is difficult to see how to do so. There is at present no efficient substitute for the steel gin, in certainty and simplicity of action, in lightness, portability and cheapness. Also it is not illegal for the owner of land to set traps in the open, and for that matter, the setting of traps in the open is winked at by local justice. The whole traffic in these trapped rabbits is an abomination. The steel trap ought to be a weapon of offence or defence; it should be used to take only creatures that are definitely harmful—as, for that matter, a rabbit may be in a garden; everyone with a garden of any considerable size knows the difficulty of getting rid of a greedy creature which prefers carnations and wallflowers even to cabbage. But that is the limit of use to which the trap should be put. It is a damnably cruel instrument, and it is not possible to justify its use as a means of making money.

I have never happened to see a rabbit swim. But they have often been seen swimming, either voluntarily or because they have been forced to do so. The late J. G. Millais has described in *British Deer* how he placed rabbits in the water by the side of a boat, so that he could sketch them as they swam. In *British Mammals* he writes that "they swim with the head held as high as possible, while the hocks of the hind legs appear above the element at each stroke. The shoulders and front part of the body are buried beneath the water, while the rump and tail are high and dry." That is also the way in which a hare swims.

If hares are voracious creatures, what is to be said of rabbits? They are not merely voracious but almost omnivorous. Their main food is grass, but there is no farm crop which they will not attack, and there are few trees in the wood which they will not bark. They are particularly fond of young birch, and will gnaw the ends of branches of scrub-oak and hazel, leaving them close to the main stem as if they had been cut off with a sharp knife. In the same way they will gnaw at gorse bushes, and there are wild open spaces such as the pebble ridges of Dungeness where the rabbits have bitten back the gorse bushes on every side as high as they can reach standing on their hind legs—a quaint piece of natural topiary.

As for undergrowth in covert, there are few shrubs which can definitely be said to be rabbit-proof. I have read that laurel is not attacked, but can say from personal experience that young laurel bushes will be badly bitten back. Sir Herbert Maxwell, in *Memories of the Months*, has compiled a list of certain ornamental shrubs which can be recommended for planting where rabbits have to be considered, and this list has been amplified in a chapter on "Game Coverts" written by the late Captain Aymer Maxwell in *Pheasants and Covert-shooting*—a chapter which is the best treatise on the subject in existence. Among the plants recommended as practically rabbit-proof are the following:

"Common barberry, *Berberis vulgaris*; Holly-leaved barberry, *Berberis aquifolium; Berberis Darwinii; Cotoneaster Simmonsii*; American partridge-berry, *Gaultheria Shallon*; Japanese rose, *Rosa rugosa*; Japanese wine-berry, *Rubus phœnicolasius*; Snowberry, *Symphoricarpus racemosus*; Single guelder rose, *Viburnum opulus*; Variegated laurel, *Aucuba japonica*; Box, *Buxus sempervirens*; Sea buckthorn, *Hippophæ rhamnoides*; Japanese snow-flower, *Deutzia crenata*; Dogwood or cornel, *Cornus sanguinea*; Shrubby St. John's wort, *Hypericum Androsœmum*; Common lilac, *Syringa vulgaris*; Japanese lilac, *japonica; Viburnum tinus*."

At one time the ordinary *Rhododendron ponticum* used to be on the rabbit-proof list, but in very hard weather rabbits have been known to attack it. And in the above list, it will be seen, are several plants which, although no doubt Captain Aymer Maxwell proved to his own satisfaction that they are not touched by rabbits, are not likely to be tested on a large scale in other coverts—lilac, for example, and Japanese roses. Possibly these have been tested in a wild garden of some kind. As for plants which are rabbit-proof in an ordinary flower garden, my own experience is insufficient to allow the making of a list; what is certain is that wallflowers and carnations will be nibbled down to stalk or soil, and so will lupins and Canterbury bells. But what angers me most, when I am in the helpless case of entertaining a rabbit in the garden and being unable to find it, is when the little beast night after night eats my crocuses.

No one knows when the rabbit was introduced into England, or whether indeed it was ever introduced at all. We meet rabbits in literature first with Polybius, who in his "Universal History," compiled in the middle of the second century B.C., writes that there were no hares in Corsica, but that there were other little beasts resembling them which burrowed in the ground. Strabo a century later writes of little burrowing hares as being very abundant in Spain, and both he and Pliny tell the same story of the inhabitants of Majorca and Minorca begging for help from the Romans to combat the damage done by the multitudes of these animals. Strabo writes further of the use of wild weasels from Africa trained for the purpose of hunting these little hares; the weasels are muzzled and turned into the holes, from which they drive out the animals, to be caught by people standing by.

So that the rabbit appears first as an animal of Western Europe; and as England was once connected with the mainland of the Continent, there would appear to be no reason for supposing that there were no rabbits in England and France at the time when they were so abundant in Spain. At all events, there is no evidence whatever that they were introduced by the Romans.

There is another story of the introduction of rabbits into a country not their own, of which the beginning dates no further back than the latter half of the last century, and of which the end is not yet. That is the story of rabbits in Australia.

The story is sometimes wrongly told. It seems to be assumed in some accounts that rabbits were unknown in the Antipodes until the 'fifties. But that is not so. A census of live stock taken at Port Jackson in 1788 includes five rabbits, three of which belonged to the Governor. In 1791 some rabbits, of which the number is not recorded, were introduced from Cape Town by Governor King. According to Surgeon Cunningham, they were being bred in batches in New South Wales in 1825, but none were wild. The first mention of the rabbit as a wild animal occurs in the *Hobart Colonial Times*, Tasmania, of May 11th, 1827, when it is mentioned that the "common rabbit" was running about in thousands on some large estates. But they were plentiful elsewhere a few years later. In 1842 Commander J. L. Stokes of H.M.S. *Beagle* landed on an islet in Bass Strait and named it Rabbit Island, from the abundance of rabbits which he found there. He turned some loose on Deal Island in Bass Strait "for the benefit of any unfortunate voyagers who might be thrown hungry ashore in this locality."

But the real rabbit trouble dates from 1859. In that year the Black Ball clipper *Lightning* arrived in Hobson's Bay with twenty-four wild rabbits for Thomas Austin of Barwon Park near Geelong, to whom they were delivered four days later. In three years they had become "a pest." The same thing happened in the case of John Robertson of Glen Alvie. When rabbits were first introduced, a man was charged at the Colac police court with shooting a rabbit, the property of John Robertson, and was fined £10. A few years later John Robertson's attempts to stamp out the rabbit plague cost him

From Victoria rabbits found their way into New South Wales. They multiplied with such incredible rapidity that at one period 100,000,000 acres were infested with them, and actually 25,280,000 rabbits were destroyed in one year. In 1883 the Rabbit Act provided for their compulsory destruction. Between 1883 and 1890 the destruction of the animals cost landowners, occupiers and the Government £1,543,000, and it became plain that fresh measures must be taken. The Rabbit Act of 1890 repealed the Act of 1883, and provided for the proclamation from time to time of Land Districts as "infested" and for the encouragement of the erection of rabbit-proof fences. Wire-netting fences were erected along the boundary between New South Wales and South Australia, from the Murray River northwards, a distance of 346 miles. In addition, a rabbit-proof fence was built along the western side of the railway line from Bourke to Corowa, 612 miles, and by the year 1900 the New South Wales Government had constructed 1,157 miles of wire. That is the latest date for which I have been able to find exact figures for the State measures taken to build out rabbits.

Many expedients were tried by the unhappy farmers when it was first realized with what a plague their crops were threatened. Foxes were brought in, and bred cubs which learnt to catch lambs. Ferrets were introduced, but died of cold. Weasels were imported, and destroyed other creatures instead of rabbits. Other methods are described by a writer in the *Zoologist*:

"In the Mallee Country in Victoria, which was a regular forcing-ground for rabbits, some settlers had tried to grow a few vegetables round their houses, and in order to prevent the incursions of the rabbits, had roped round their patch of kail-ground, and fastened dogs at short intervals along the rope, so that they could slip along the rope as they required in order to catch the rabbits. But the numbers were so great that the dogs soon ceased to look at them."

Next came an endeavour to extract assistance from Government:

" The settlers, in one experiment, were to fix the amount of the bonus on each scalp, and the State was to pay back 4½d. of every 6d. which the settler thus expended. The rent paid per acre being almost *nil*, it paid the lessee better to maintain a good stock of rabbits with the view of obtaining the revenue from scalp-money than to rear sheep and cattle. In another case a squatter paid rabbiters 2d. for each tail that they brought back to the house. In a short time a quantity of tailless rodents were seen running about the station paddocks. There were not, as might have been fancied, a new development of the genus Rabbit, corresponding to the Manx cat, but simply the old rabbits whose tails had brought in twopence each, and who were now turned out to propagate their race, so that the honest rabbiters should not be reduced to penury."

A more ingenious, and singularly successful, method of dealing with the plague of rabbits in New South Wales was put into practice by a squatter, Mr. W. Rodier. He first fenced in his land with rabbit-proof netting. Then he put down a large number of traps of his own design which took rabbits alive. Of the rabbits caught, the does were killed and the bucks, with their ears nicked, were set free again. As the bucks increased in numbers and the does diminished, living among the rabbits became polyandrous, and also the bucks killed the young when they were born. With the bucks preponderating in numbers the does were worried to death by their attentions, and when bucks only remained, the stock gradually died out. In due course Mr. Rodier was able to ride over the whole of his land and hardly see a rabbit, while his neighbours' lands were still swarming with them.

Mr. Rodier, in the *Field* of January 15th, 1903, described the success of his experiment:

"Outside my boundary is a howling wilderness of desolation and despair for miles in every direction; there is not a blade of grass to be seen, and the rabbits are in millions and dying in thousands daily. My plan is a wonderful success, and it staggers one that people will not take it up and assist me."

Commenting on Mr. Rodier's experiment, the *Field* at the time was emphatic in its approval. His methods were free from the objections attaching to the use of poisons or inoculation with disease; if his plan were once started it was automatic in its operation, it involved very little expense, and its efficiency had been proved beyond a doubt. Why, then, did not the Colonial Governments adopt it, or advocate it, or, if it was thought to be inconclusive, try further experiments? Or if they preferred to leave the matter in private hands, why should they not offer some inducement to others to follow Mr. Rodier's example? Those questions remain still unanswered.

Rabbits can be kept in confinement, but not if they are taken as wild adults from a bury. Rabbits so taken mope and die. An amusing account of a pet rabbit has been given by a writer signing himself "B.P." in the *Field.* He compares the sound of the rabbit's voice, when grunting with pleasure or interest, to the syllable "huck," pronounced "in the throat rabbit-proof fences. Wire-netting fences were erected along the boundary between New South Wales and South Australia, from the Murray River northwards, a distance of 346 miles. In addition, a rabbit-proof fence was built along the western side of the railway line from Bourke to Corowa, 612 miles, and by the year 1900 the New South Wales Government had constructed 1,157 miles of wire. That is the latest date for which I have been able to find exact figures for the State measures taken to build out rabbits.

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"In the Mallee Country in Victoria, which was a regular forcing-ground for rabbits, some settlers had tried to grow a few vegetables round their houses, and in order to prevent the incursions of the rabbits, had roped round their patch of kail-ground, and fastened dogs at short intervals along the rope, so that they could slip along the rope as they required in order to catch the rabbits. But the numbers were so great that the dogs soon ceased to look at them."

Next came an endeavour to extract assistance from Government:

" The settlers, in one experiment, were to fix the amount of the bonus on each scalp, and the State was to pay back 4½d. of every 6d. which the settler thus expended. The rent paid per acre being almost *nil*, it paid the lessee better to maintain a good stock of rabbits with the view of obtaining the revenue from scalp-money than to rear sheep and cattle. In another case a squatter paid rabbiters 2d. for each tail that they brought back to the house. In a short time a quantity of tailless rodents were seen running about the station paddocks. There were not, as might have been fancied, a new development of the genus Rabbit, corresponding to the Manx cat, but simply the old rabbits whose tails had brought in twopence each, and who were now turned out to propagate their race, so that the honest rabbiters should not be reduced to penury."

A more ingenious, and singularly successful, method of dealing with the plague of rabbits in New South Wales was put into practice by a squatter, Mr. W. Rodier. He first fenced in his land with rabbit-proof netting. Then he put down a large number of traps of his own design which took rabbits alive. Of the rabbits caught, the does were killed and the bucks, with their ears nicked, were set free again. As the bucks increased in numbers and the does diminished, living among the rabbits became polyandrous, and also the bucks killed the young when they were born. With the bucks preponderating in numbers the does were worried to death by their attentions, and when bucks only remained, the stock gradually died out. In due course Mr. Rodier was able to ride over the whole of his land and hardly see a rabbit, while his neighbours' lands were still swarming with them.

Mr. Rodier, in the *Field* of January 15th, 1903, described the success of his experiment:

"Outside my boundary is a howling wilderness of desolation and despair for miles in every direction; there is not a blade of grass to be seen, and the rabbits are in millions and dying in thousands daily. My plan is a wonderful success, and it staggers one that people will not take it up and assist me."

Commenting on Mr. Rodier's experiment, the *Field* at the time was emphatic in its approval. His methods were free from the objections attaching to the use of poisons or inoculation with disease; if his plan were once started it was automatic in its operation, it involved very little expense, and its efficiency had been proved beyond a doubt. Why, then, did not the Colonial Governments adopt it, or advocate it, or, if it was thought to be inconclusive, try further experiments? Or if they preferred to leave the matter in private hands, why should they not offer some inducement to others to follow Mr. Rodier's example? Those questions remain still unanswered.

Rabbits can be kept in confinement, but not if they are taken as wild adults from a bury. Rabbits so taken mope and die. An amusing account of a pet rabbit has been given by a writer signing himself "B.P." in the *Field*. He compares the sound of the rabbit's voice, when grunting with pleasure or interest, to the syllable "huck," pronounced "in the throat without opening the lips." That seems to me to be a difficult feat of sound production; the sound is really a gentle grunt. Belgian "hares," which of course are merely a large type of rabbit, make the same noise. Occasionally the sound is louder, and is accompanied by a stamp of the hind foot; this is a sound of impatience or alarm, and I should guess that it always accompanies the stamp given by a wild rabbit to warn its companions. "B.P.'s" rabbit used to growl when angry. He has an interesting note on the rabbit's discrimination by scent:

" Rabbits have a keen sense of smell; my wild rabbit will not eat anything that has been handled by a stranger. If I buy apples from the greengrocer, she will not touch them until they are washed. On the other hand, she likes any article which has been much handled by me; she often sets to work to lick my hands and clothes. She is a most charming, affectionate little animal, but not a satisfactory pet—subject to mad panics and with a mania for going up the chimney."

The common rabbit can be crossed with the Belgian "hare," and this cross has actually been effected on some shooting estates, by turning out Belgian hares among wild rabbits, with the idea of improving the size and weight of the stock. Actually the cross is not satisfactory as regards shooting, since the resulting animal is slow and lazy and offers a poor mark. Wild rabbits in their natural state weigh when full grown between 2½ and 3½ pounds. But much heavier rabbits have been shot. There is a record of an old buck killed near Newport Pagnell in 1890 which weighed 4 pounds 14 ounces, and this was in a district where no fresh blood had been introduced. On the other hand, the heaviest rabbits that have been recorded—one shot at Stratton Strawless, Norfolk, for example, which weighed 6 pounds 8 ounces—have certainly been the offspring of wild rabbits mating with introduced Belgians.

CHAPTER TWENTY-THREE

THE WILD CAT [*Felis catus*]

WHAT are vermin? The word is derived from the Latin word *vermis*, a worm, and was originally applied, so the Oxford Dictionary, that friend of writing men, informs us, "to reptiles, stealthy or slinking animals, and various wild beasts"; and now, except in Australia and the United States, "almost entirely restricted to those animals or birds which prey upon preserved game."

It is a word which I hate. It implies all the evil qualities which we have no justification for attributing to birds and beasts, just because they happen to interfere with our own modes of life. They have just as much right to get their living as we have, and they ought not to be called by a degrading name because they do it. Least of all ought they to be placed in a degraded class because they happen to prey on other birds or beasts which we decide we wish to kill for ourselves. Let us call them competitors, or enemies, if you prefer the word, but—perhaps with reservations here and there—let them be treated with the honour that is their due. Some of the enemies of game birds—peregrine falcons, for example—are among the noblest of the bird creation.

Can we place the enemies of game in some sort of order? Let us begin with the most interesting, the mammals; and first with that beautiful and savage creature, the wild cat. The animal, *Felis catus*, has lived on in Britain through the thousands of years since its early contemporaries the lion, the hippopotamus, the mammoth, the hyena and the reindeer have disappeared. It is larger than our domestic tabby, measuring about 1 foot 10 inches from the tip of the nose to the base of the tail, which is a foot long in a good specimen. But larger cats than this have been recorded. Thomas Bell, in his *History of British Quadrupeds*, mentions a wild cat which was killed near Cawdor Castle in Scotland, and which measured 3 feet 9 inches from the tip of the nose to the tip of the tail.

The ground colour of the wild cat's coat is yellowish-grey, which is marked with black, exactly in the same way as our domestic cat as regards the head, but striped vertically on the body and with broad black rings round the long, bushy tail, which ends in a big black tip. The eyes are yellow-grey and large, and the whiskers white.

Wild cats are no longer to be found in England or Wales, but are fairly numerous in parts of Scotland. I have never had the luck to see one alive in a wild state, but once I walked on an Inverness-shire moor all day hoping that I should see one which had been seen a few days before by a lady, who thought it was a dog and did not shoot at it. (I was not going to shoot at it either.) But that cat, so far as I know, was not seen again that year. I was the more anxious to see it because we were walking the same ground on which the last wolf in Scotland was killed—the big black wolf which killed two children and in turn was killed by MacQueen of Pall-a'-chrochain in 1743.

Scottish gamekeepers have no love for wild cats, which will kill anything from a fawn or a lamb to hares, grouse, squirrels and small birds. They are easily trapped, poor beasts, if their haunts are known, and I was once sent a wild cat by a keeper in Scotland simply for it to be identified, as the keeper's employer did not believe that there were wild cats on his moor. Its skin was dressed to adorn a schoolboy's room. That is the nearest I have come to seeing a wild cat in its natural state; but I once saw one which had been caught, in some way uninjured, and had been sent to the Zoo, where it hid itself in its bed in the cage and would not be seen. One night, however, when I had been given leave to walk round the Gardens at night, I stopped opposite the wild cat's cage and made a noise like a rat being killed. For one moment a grey shadow rose above the rim of the box—a head with pointed ears—then it sank down again. I should guess that no animal endured greater misery in captivity than that unhappy wild creature.

But wild cats, if they cannot be tamed when they have once known liberty, can be kept in captivity without undue suffering if they are taken as kittens. Miss Frances Pitt has related in the *Field* (June 23rd, 1934) the story of her wild cat Satan, which came to her as a young kitten in June, 1930. She gave him as a companion a long-haired kitten of semi-

Persian type, whom he loved from the first, and which has given him several litters of kittens. He has never become really tame, though he knows the various members of the household, and will take food from Miss Pitt's hand; but if a stranger comes to the cage he retreats into his sleeping box, hissing and spitting. His progeny have been treated as pets, and Miss Pitt describes them as "a queer mixture of affectionateness and shyness." But they are too sporting in their habits, and their desire to be hunting anything and everything, from field-mice to geese, has led to the shutting up of each in turn, to keep them out of mischief. Although the mother is a long-haired cat, each of Satan's kittens have been like their sire, short-coated, striped tabbies, with the heavily ringed tail of the true wild cat.

CHAPTER TWENTY-FOUR

THE COMMON OTTER [*Lutra vulgaris*]

TO the large family of the *Mustelidæ* belong the otters, the badgers, and the weasels. Of otters we have only one species in the British Isles, and it is one of our oldest inhabitants—other than man—for its remains have been found in Norwich Crag, which belongs to the Pliocene period. Despite hunting and trapping, this beautiful creature is still common throughout the country, and I should guess that there is not a river bank in any county from which it does not hunt for food. Otters have even been killed in London, in the insane way in which wild creatures which stray into town streets seem to be always persecuted, and I have myself watched an otter fish through a morning and afternoon in a weir pool in the Thames—a pool in which I had been hopefully fishing for trout myself. But you are lucky to see an otter hunting; as a rule the only sign of its presence, as you may see it on the rocks of a Scottish river, is a salmon lying with its neck bitten out, high and dry.

An otter's body is made for the water. It is sinuous and powerful, with short legs and webbed feet with strong claws. The tail is broad at the base, tapering towards the tip, and flattened at its thickest part. The fur, which has its market value, is fine and soft next the body, and yellowish-grey, tipped with brown. In the fur is set longer and coarser hair which is bright umber, except about the chin, throat, belly and the inner sides of the legs, which are grey, tinged with yellow. The head is short and broad, much like that of a seal, and the eyes are black. Like others of the *Mustelidæ*, the otter possesses under the root of the tail a small gland secreting a fœtid liquid.

An otter in its wild state is a shy and elusive creature, and chooses its "holt" or "hover" with a view to seclusion and easy access to the water. Hollows between the roots of trees growing on the water's edge are often chosen, and so are holes under boulders, and sometimes the nest is made in the thicket of reed-beds. Wherever it is placed, the otter always has somewhere near a place where it can sit and dry itself, for it never goes to bed wet.

Otters feed on all kinds of fish, and are said to prefer eels. I have never verified this on trout-water where I have occasionally wandered unsuccessfully with a rod. Sometimes they hunt in pairs, and one of the most delightful descriptions of the chase of a salmon by a pair of otters is to be found in the brothers Stuart's *Lays of the Deer Forest.* The elder brother, John, caught sight of them swimming down stream one after the other "as flat as floating skins upon the water, but their round short heads and black eyes constantly in motion." Behind a stone in front of them he could see three salmon, one of them a large fish:

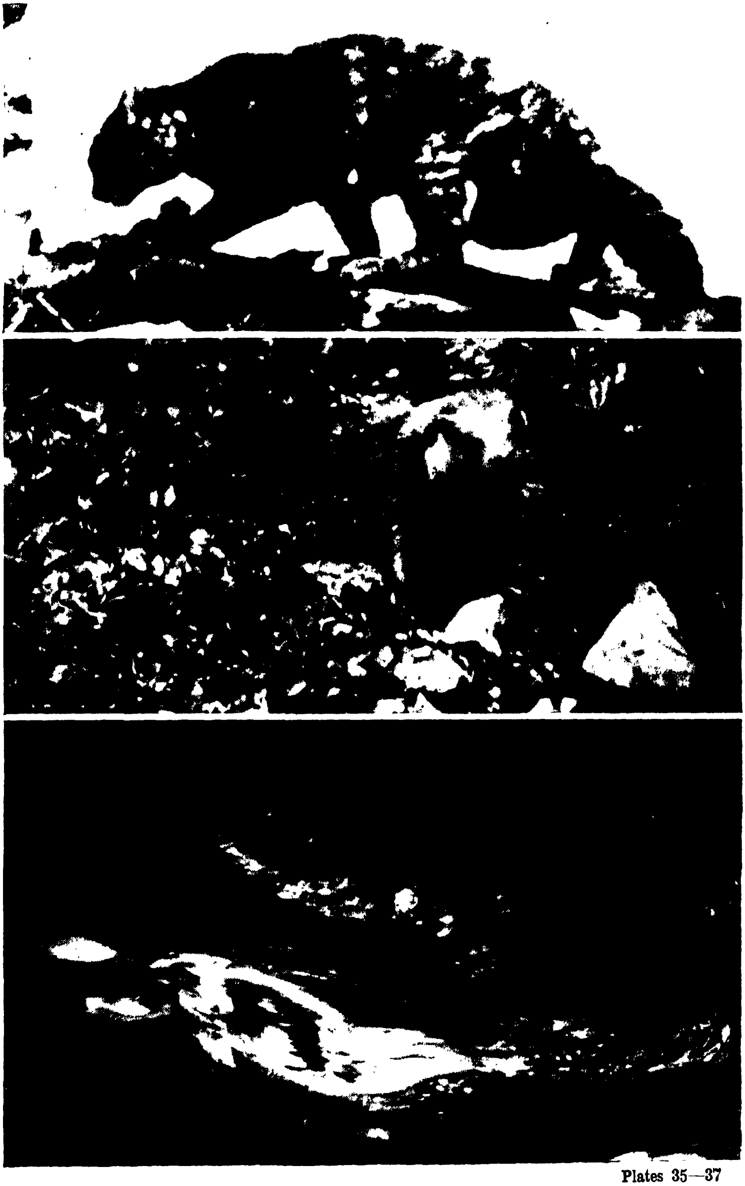
"The otters were steering down the pool, bobbing and flirting the water with their snouts, and now and then ducking their heads till they came over the stone: in an instant, like a flash of light, the fish were gone, and where the otters had just floated there was nothing but two undulating rings upon the glossy surface. In the next instant there was a rush and swirl in the deep, under the rock on the west side, and a long shooting line going down to the rapid like the ridge which appears above the back fin of a fish in motion. Near the tail of the pool there was another rush and turn, and two long lines of bubbles showed that the otters were returning. Immediately afterwards the large salmon came out of the water with a spring of more than two yards, and just as he re-entered the otter struck him behind the gills, and they disappeared together, leaving a star of bright scales upon the surface. . . . The skill with which they pursued their game was like that of a well-trained greyhound in a course—whenever they came to the throat of the pool, they pressed the fish hard to make him double into the clear water, and one was always vigilant to make him rise or turn, the increased efforts of which exhausted his strength. With equal sagacity they worked him at the tail of the pool to prevent him descending the rapid. Twice, in returning, as the fish doubled round the boulder behind which he had originally lain, the nearest otter made a counter-turn in the opposite direction, and caught the salmon as they met, silvering the water with a flash of flying scales. With this race the fish began to tire, and the otters continued to press him, till at last all three appeared turning, and struggling, and knitting together in the deep water—came up to the surface in a heap, rolled over and over, the otters coiled in a ring, and the fish splashing between them, and striking the water with its tail, till suddenly all disappeared, and left a thick circle of bubbles. In a few moments they rose again, skimmed on the surface, turned over, and spun round like a wheel; but by this time one of the otters had fixed the fish behind the shoulder-fin, and both were working towards the farther bank."

Besides fish, otters will eat birds and rabbits. They have been known to raid a poultry yard, and to pull wild duck down under water. But their main fare is fish, and their habits in the main are harmless. If they catch salmon, they have every right to do so, and to trap them on a salmon river to my mind is as churlish as it is cruel.

An otter, playing in the water, is a delightful sight. Years ago, when I was writing a small book about the Zoo, I used to go nearly every day to the Gardens in Regent's Park, and there became acquainted with an otter, whom I used to visit every day. She got to know me, and would catch sight of me coming and would run up to the side of the pond. One day I gave her an orange (for which I was vehemently upbraided by a passing lady, who pointed to the notice forbidding visitors to feed the animal), and she began to play with it at once. She dived with it, let it go, caught it again, tossed it into the air, caught it on her nose and tossed it up again, went all round the pool with it and took a header to come up under it and toss it up in the air again. I thought of giving her a ball, but I was afraid she might bite it up and swallow it.

But the best account of a pet otter was sent to the *Field* by that remarkable naturalist and sportsman, the late Arthur Heinemann. Incidentally he gives an interesting list of the things an otter likes to eat:

"I have now a tame otter which has been brought up from a tiny cub. Loo was dug out one day last year on the Torridge, and then weighed about 1½ pounds. She readily took to the bottle, which was a Mawe's patent feeder, filled with much diluted milk, one part milk to three parts of water, and given lukewarm. She would lie on the ground and clasp the bottle with her little pads and suck away contentedly. She is now about the size and weight of a big rabbit, but as it is unlucky



Plates 35—37

Top: ALONG THE BIRCH BOUGH: WILD CAT.
Middle: GOOD HUNTING: OTTER ON STREAM BANK.
Bottom: A SWIRL IN THE CURRENT: OTTER TURNING.

to weigh babies, Loo has not been put in the scales. I find she will greedily devour snails, shells and all, thus differing from a badger, which always spits out the shells. A trip to the seashore discovered her fondness for small crabs, which she would also eat shell and all. She is now fed principally on herrings and rabbits, which latter she will skin and turn inside out like a glove. I have seen a heap of rabbits' skins similarly treated on the Porlock Marshes, which I now think must have been the work of otters which I have at various times spurred there. Loo often leaves the heads and tails of fish, but not always, though she will hardly ever eat the roe. Small birds and moor-hens she enjoys, but will not look at field-mice. A rat in a cage excited her greatly when put together in a tub, and she went for it, but would not kill it. I have only been lucky enough to get one big frog for her, but this, her first one, she went for at once, and ate every morsel of it, though I have usually found the eyes and skin of frogs left behind by wild otters.

"At first Loo did not care much about going into the water, and even now she does not dive very deep. She will retrieve anything like an apple or potato or stick that catches her eye or that I throw in for her. Swimming along the bed of a stream, she will shove her flat head into the mud, presumably searching for eels, but under water she seems to depend more on her eyesight than on her powers of scenting anything. She also likes slugs, but not so much as snails. She has a wonderfully bright and full eye, all black like a boot button, and shows a lot of the white in the corner, which gives her a very wild and fierce look. Running water from tap or waterfall causes her infinite delight as she rolls over and over on her back beneath it. Her cries are many and varied—a hiss when she plays or is frightened, a squeal or scream when she is in a rage or if I show her a bass broom, and a short, sharp, bird-like whistle or call which she utters in answer to mine, or when she hears my voice or footstep. She follows well, comes to my whistle, and will come out of the stream at my call. She has no fear of dogs or cats, and is most mischievous and playful in the house, tearing and shaking rugs and curtains, and delighting to get in behind the books in my bookcase and turn them all out on the floor. She follows well in the dark, is not nearly so shy and nervous of strangers approaching as tame badgers are, and can be handled suddenly without attempting to bite. She has only shed her coat once since I have had her, and she is doing so now, but slowly. She curls herself up to sleep, holding one of her hind pads in her mouth, and keeping it there with her two fore ones."

That is surely the most charming description of a pet written by a Master of Otter Hounds. Arthur Heinemann was for years the Master and Huntsman of the Cheriton pack, of which he kept ten couple at Porlock and Barnstaple.

Even adult otters are not difficult to tame. When I was at school B. R. Bambridge, who had a fishing tackle shop next to Windsor Bridge, and who was himself as skilful an angler as he was patient at his counter, somehow became possessed of an otter which he kept in a room at the back of his shop, and which used to dive into a tank for roach. But no doubt otters taken as cubs fare best. Two such pets I have seen, kept in his garden by Captain Sharp, proprietor of the Beaufort Arms opposite Tintern Abbey on the Wye, and at one time Master of the Wye Valley Otter Hounds. Their names were George and Mary, and they must have been familiar pets to many visitors, but their lives were short, for when Mary was about eight months old George killed her when they were fighting over their food, and George was sent to the Clifton Zoo, where he died. But Captain Sharp has sent me the following delightful description of another otter which he kept for three years. Her name was Bella, and she was "the most interesting animal I have reared":

"I weaned her on a bottle and used to take her out on a lead just like a dog. I frequently took her up to my trout ponds, where she would always retrieve me three fish before starting to hunt on her own.

"On the question of feeding I always advise giving them plenty of mollusca, as I found by observation that the first thing Bella would do when I let her into the stream was to go after snails, etc. In my opinion it is like giving grit to a fowl, and that is why I advised the Zoo not to have a too artificial pond, but to have their enclosure more like a duck pond. With regard to sleeping quarters, I always liked to have a flat top, so that she could shake herself before getting into her dry straw. In her enclosure she had a diving board, and her favourite trick was to push my hat off my head into the water, dive after it, and give it back to me.

"Eventually she got the call of the wild and I let her go. The first time she disappeared for a week, and eventually I was called down to a pond by the river at ten o'clock one night, and I could hear her chasing moor-hens. I called her and put both my hands in the water. She swam round, got the scent of my hands and crawled up on to my shoulder—it was very interesting to watch. She got away again, and I knew a dog otter was after her, so I thought it was only fair to let her go."

Captain Sharp adds, as advice to anyone who may think of keeping an otter as a pet, that it is essential to give fresh clean drinking-water every day.

Otters vary considerably in size and weight. The average weight of a dog otter is from 20 to 25 pounds, and of a bitch 15 to 18 pounds. But many heavier otters have been recorded. The following weights and lengths have been recorded by Mr. Thomas Southwell in the *Field*:

Weight in Pounds.	Length in Inches.	Sex.	Weight.	Length.	Sex.
37	48	Male	23	48	Male
30	53½	,,	18½	49	,,
28	50½	,,	16	43	Female
27	53	,,	16	43	,,
27	50	,,	14	44	,,
23	50	,,	—	—	—

It is doubtful what is the heaviest recorded weight of an otter. Captain E. F. Oakley, writing in the *Field* (June 27th, 1903), states that "the accepted record weight for an otter is, I believe, 38 pounds, but I have one in my possession, stuffed by Messrs. Rowland Ward, which weighed 42 pounds (wet in a sack), say 40 pounds. Messrs Rowland Ward were unable to accept this as an authenticated record owing to the lack of witnesses, but said the measurements were larger than those of the otter which weighed 38 pounds. As a matter of fact I am satisfied myself that the weight was genuine, since my keeper, a most reliable man, weighed it twice carefully. He trapped weight for a boar, and 22 for a sow. But many heavier badgers have been weighed than these. The late Arthur Heinemann, who knew as much about badgers as any man of his time, has recorded in the *Field* the following weights of badgers of both sexes, all dug out in Devon and Somerset by himself: "Boars, 35 lbs., 33 lbs., 33 lbs., 32½ lbs., 31½ lbs., 30 lbs.; sows, 34 lbs., 31½ lbs., 31 lbs., 30 lbs., 30 lbs., 30 lbs. The two biggest pairs from one earth were: Boar, 33 lbs., sow, 34 lbs.; and boar, 33 lbs., sow, 30 lbs." These West Country badgers apparently are heavier on the average than those in any other part of England or Scotland.

Badgers live in pairs, in an earth or "set." A badgers' earth is a most interesting place, partly for its excavations, partly for its surroundings. Once I had an opportunity of studying badgers and their earth at close quarters; it was during the early part of the War, when I had been posted to guard a powder factory, which meant that my work by day and my round of sentries at night took me close to the earth. This had been in use for some time, and you could only guess its depth by the immense amount of soil that had been heaved out of it; there were three stories, so to speak, on a sharp slope of which the whole contour had been altered by the badgers' digging. Here and there were platforms, shiny surfaces on which badgers would roll, and there was the trunk of an oak scored deep by their claws; and leading off from these platforms and galleries were paths through bluebells and primroses and dog's mercury and butcher's broom, paths by which the badgers went on the openings of their long rounds by farm and field and which led, too, to their places of retirement, holes scraped like small earth-closets among the flowers and rain-rotten leaves. There the badgers lived in peace for a while, and I used to hear them grunting and squealing by night, either in romps or quarrelling; until in the days of short rations it was discovered, or alleged, that there were depredations of neighbouring poultry farms which could only be due to badgers: so a keeper was deputed to await the badgers on their rounds. But he did not kill all, for in the following spring all the bracken and grass contents of the earth, which had served as bedding during the winter, were hurled out in the badgers' customary spring cleaning.

Badgers are omnivorous, and will eat almost anything they

Plates 38–39

Top: RARELY SEEN IN DAYLIGHT: BADGER HUNTING.

Bottom: TWO BADGER CUBS LOOK FROM THEIR EARTH ON THE OUTER WORLD.

come across, but they have their favourite foods. Young rabbits, frogs, beetles, worms, snails, slugs, nuts, pignuts, acorns, slow-worms, wasp grubs, are part of their diet, and they are said to take pheasants' and partridges' nests. They may do so, but I have had badgers in the woods near my house for many years, and I have never known a badger take a nest; nor has a badger ever done any harm in my garden, though badgers have damaged lawns in the neighbourhood, and I have heard of them digging up bulbs. I have little doubt that a badger on his round, if he came by accident on a partridge's or a pheasant's nest, would have no hesitation in making an omelette out of the contents, but I do not believe that badgers deliberately hunt for the nests of game, and if a badger makes occasionally a raid on a poultry farm, I believe that it is, so to speak, a "rogue" badger which has found an easy way to a meal, and which, doubtless, is better out of the way. But in the main I hold the badger to be an amiable and companionable friend in the woods, and undeserving of any gamekeeper's pursuit. And, indeed, I imagine that many owners of game coverts give orders for its protection.

For creatures which look so heavy and solid, badgers are almost incredibly lithe and active. They can climb a five-barred gate and scramble through the top. I have to surround the whole of my garden with wire netting as a protection against rabbits, and a five-barred gate which leads out of part of the kitchen garden is wired to the level of the wire netting at its side. I have found traces of mud, scratches and badger hair sticking to the edge of the wire, over the top of which the badger has climbed through the gate. And the narrowness of the passage through which a badger can make its way must be measured to be believed. I was once driving home at one o'clock in the morning, coming down from London, when as I was passing Busbridge Church outside Godalming, I saw a three-quarter grown badger in the road. It was dazzled by the headlights of the car. On one side of the road was the stone wall of Busbridge churchyard, and on the other a bank, surmounted by upright iron railings. The badger went up the bank, slipped—I will not even say squeezed—between the railings and disappeared. We measured the railings the next morning, and found that the space between uprights was just over 4 inches.

CHAPTER TWENTY-SIX

THE MUSTELINÆ

The Polecat (*Mustela putorius*); The Marten (*Mustela martes*); The Stoat (*Mustela erminea*); The Irish Stoat (*Putorius hibernicus*); The Weasel (*Mustela nivalis*).

THE POLECAT [*Mustela putorius*]

BADGERS, fortunately, are not decreasing, and may be increasing in numbers. Another creature, which must be admitted to be an enemy of game as certainly as the badger may be given the benefit of a naturalist's doubts, is the polecat, and the polecat is today not very far from extinction in most parts of the country. In the north of Scotland and in the wilder and more mountainous parts of England and Wales it lingers on, and it is still reported occasionally from the southern counties, but there can be little question that it becomes rarer every year. And that it should become rarer would appear to be its certain fate, in accordance with the natural law of the countryside; for it is a fierce destroyer of animal life that is valuable to man. There are two possible derivations of its name: Professor Skeat suggests that it may be *pool-cat* or *pol-cat*, the cat that lives in a hole or burrow; and the Oxford English Dictionary derives it from O.F. *pole* or *poule*, from the creature's fondness for attacking poultry. We are left to our choice, but I cannot think of any other animal which is named after the animal on which it preys.

Another name for the polecat is foumart or foulmart, from its disagreeable smell; the pine marten, on the other hand, is the sweetmart. To me the possible derivations of these folk-given animal names are a most attractive study, and one of the most interesting points is the difference of opinion as to derivation between the various authorities. There seems to be agreement that a third name for the polecat, fitchew or fitchet, is derived from the O.F. *fissau*, which in turn comes from an old Low German and Scandinavian verb which means to make a disagreeable smell. But when we come to the etymology of another allied name, ferret, authority is again at variance. The Oxford English Dictionary refers you back to the Latin word *fur*, which means "a thief." But why should a ferret be coupled in idea with a thief? And if you go back to Latin, why not to the Latin name for the ferret, *viverra*? The letter V was not, of course, pronounced exactly as we pronounce it in modern English, but if in sound it was something between F and W, *viverra* is nearer the sound of ferret than the other Latin word that has been suggested.

A big male polecat is a handsome creature, perhaps 24 inches or a little more from the tip of the nose to the tip of the tail, which is 6 or 7 inches in length. The female is smaller, 16 to 22 inches in length, with a tail of 6 to 7 inches. The outer fur is dark brown and the under fur yellowish, so that in movement there is a play of colour. The lips are white, and there is a lighter tinge of yellowish brown behind the eyes and down the cheeks. A male polecat, sometimes known as the "hob," weighs up to 2¾ pounds, and the female, the "jill," up to 1¾ pounds.

A polecat is a fierce and cunning marauder, and kills for pleasure as much as for food. If it should set out to kill rabbits, its work is unmistakable; rabbit after rabbit will be found with the back of its neck eaten out, the blood sucked and the rest left untouched. I have only seen one polecat alive, but have had another one killing rabbits in fields and hedgerows near the house. Oddly enough both these polecats were seen or found to be at work during the War. One morning early in the War, when I was stationed at a powder factory, I happened to look over a gate which led from the factory into a ride in the wood outside. There, unconcernedly moving among the dog's mercury, was a big polecat, shining in the sunlight; I remember the light on his coat. The gate was fastened and covered with barbed wire, so I could do no more than watch the creature until it disappeared into the wood. As it happened I saw this polecat within a hundred yards of the badgers' earth which I have described in the preceding chapter.

I never found any traces of this particular polecat's work, but the other was not only known by his doings, but actually seen killing a rabbit. One day two rabbits with their necks torn out were found in a ride in a wood close to my house at Hambledon. The next day he killed two more, and two more on the day following, when the gardener saw him; but as it was the only time a polecat had been known to visit us, and as I hoped to see him myself, orders were given that he was not to be interfered with. Then he disappeared, only to reappear again two years later, to start killing rabbits again, and always in the same unmistakable way. But this time he could not be tolerated so easily; he was at work near a poultry run, and rations in those days were scanty. So the word went out that he was to be watched for; which was all that happened, for he was never seen again.

Polecats, I think, prefer rabbits to other food, but there is no small animal or bird on which they do not prey. They eat frogs, and they will catch fish, and James Harting chronicles them as catching eels in the early morning among dewy grass. Bell, the old naturalist so often quoted, writes in *British Quadrupeds* of a polecat which went regularly to the bank of a river for eels, and was found to have carried eleven of them back to its retreat. He quotes from a writer in *Loudon's Magazine*, who had discovered a female polecat's den; there were frogs in it:

"In a side hole I picked out and counted most carefully forty large frogs and two toads. These were all alive, but merely so; capable of sprawling a little, and that was all; for the mother had contrived to strike them all with palsy; and on examination I found that the whole number, toads and all, were bitten through the brain."

Bell gives other instances of the ferocious joy in killing which seems at times to possess these animals, notably a case in which a single polecat killed sixteen full-grown turkeys in a night. But polecats will even on occasion attack human beings. Lady Lloyd, writing from Bronwydd in Cardiganshire, gave an instance of such an attack in the *Field* of August 1st, 1903:

"A boy of fourteen called Evan Jones, son of Mr. and Mrs. Jones, of Penpynfarch Farm, near Llandyssil, in Cardiganshire, noticed a batch of polecats, nine in number, gambolling in a field on this farm. Finding the stones he threw did not disconcert them, he advanced towards them with a short stick in his hand. No sooner had they seen him than they rushed at him, so the boy ran home, though they tried to climb up his body. Later in the evening Mr. Tom Davies, of Cromcathan, hearing of the episode, went to the field with a stout stick. Again the polecats rushed at him. They jumped at his hands and face, and swarmed round him, trying to climb up his body. The next day they were there again, and three of them were shot, since when they have not returned. This farm is close to Sir Marteine Lloyd's estate in Cardiganshire, and Sir Marteine thinks that it is very unusual; he has heard of weasels doing the same some years ago. Polecats are common in Wales. Sir Marteine destroyed thirty-six in one season in 1886."

A polecat chooses for its nest or den the disused burrow of a rabbit or a fox's earth, and divides it into two parts, one for the nest itself, where the young are born blind and covered with buff-white hair, and the other part for a larder, where are stored young rabbits and leverets, partridge chicks and so on. Whenever frogs are placed in the larder, they seem always to have been paralyzed in the manner described by Bell.

Years ago, when polecats were commoner and country gentlemen better able to maintain private packs of hounds, foulmart hunting was a popular sport in the north of England. Fifty years ago polecats were regularly hunted in Cumberland, Westmorland, Lancashire, North Wales and Cheshire, and the accounts of runs make curious reading. A description of the work of a pack kept by Mr. Joseph Langcake, of Aspatria in Cumberland, appeared in the *Field* of May 5th, 1883:

"Polecats may be hunted by day or by moonlight, but William Barnes, who hunts Mr. Langcake's pack, prefers the latter. The hunting season commences with February, the chief months being March and April (the breeding season), and lasts until the meadows are well clothed with grass, and likely to sustain injury from the trampling of too ardent sportsmen. At this time of the year male foumarts have been known to travel many miles in the course of a night, so that it is far more easy to drop upon one as he takes his 'walks abroad' than to surprise him in his lair. On being pursued, he instinctively makes for his native ground; but if hotly pressed will, if possible, take refuge in any drain which chances to be in the immediate locality. Once *sub terra* he is very difficult to unearth. . . . In the early part of the season the hunters seek the polecat on the banks of the open cuts, locally designated 'sowes'; later on they quest the fallow breaks and drier grounds. The usual time for 'throwing off' is ten in the evening (by moonlight) and 3 to 4 in the morning (by daylight). The average length of a run is from three to five miles, but occasionally an old 'varmint' affords a chase of from eight to ten miles."

But these runs of even ten miles are short compared with the runs afforded by the polecats, or "foulmarts," as he preferred to call them, hunted by Captain Hopwood of Hopwood in Lancashire. He also owned a pack of foulmart hounds, which he bred for the single purpose of his sport, and brought them to such a pitch of perfection that they would own no scent but that of a foulmart. He hunted this pack in the 'eighties, and one of his followers described his methods to James Harting:

"To such perfection in nose and dash did he bring his hounds that it was impossible for anyone, except himself and the best Lancashire runners of the day, to keep at all on terms with them. He usually began hunting at daybreak, casting on till a drag was struck of a foulmart that had been travelling in the night. The length of the runs in the spring and early summer was extraordinary—often ten, fifteen and over twenty miles, usually straight, and over a wild mountainous country."

Two runs in particular were described to Harting, almost incredible in their incident and length:

"In Wales they struck a drag on the left bank of Bala Lake, opposite Bala, and ran him into the country above Nannai, Sir Robert Vaughan's place, near Dolgelly—a real wild mountain run, without a single cast being made, and the distance at least twenty-two miles. In the Lake country I remember a run wonderful in length and the roughness of the country traversed. A drag was struck in the woods by Newby Bridge. They ran him through Greythwaite and Hawkshead, over the Braythy River, across Laughrigg Fell and the deep Rothay River, and killed him in the fells above Ambleside. This run must have been from eighteen to twenty miles in length."

Captain Hopwood may have used the word "varmint," but obviously the word "vermin," as understood by gamekeepers, would never have been in his mind. He never hunted by night, because that would have meant hunting up to him while still travelling, and so giving the smaller, slower animal less chance of escape. Nor were traps ever set in his country for foulmarts, which to him were creatures only to be hunted on the strictest principles of wild and fair sport.

Polecat ferrets are a domesticated variety of the wild polecat. They were probably the "wild weasels" from Africa which were supplied to the inhabitants of the Balearic Islands, as described by Strabo, in order to enable them to deal with the "burrowing hares"—I have referred to his account in the chapter on the rabbit.

THE MARTEN [*Mustela martes*]

It was believed at one time that both the pine marten and the beech marten were inhabitants of these islands. This was because martens were found which, instead of the yellow or yellowish bib, had a greyish-white breast spot; but examination of skulls and comparison of other characteristics showed that these specimens with pale breast spots were merely aged pine martens. As a fact, no certified occurrence of the beech marten, which is a Continental species, in England has ever been recorded.

A typical pine marten is rich dark brown in colour, with the throat and breast yellow, which may vary in depth from orange to pale cream or yellowish white. Its tail is long and bushy; the whole length of a male may vary from 2 feet 4 inches to 2 feet 11 inches, but the tail is often 12 inches long. The weight of a big male is over 3 pounds, and of a female not more than 2 pounds 8 ounces.

Pine martens are rare animals in this country, and in many parts are extinct. Their strongholds are the mountainous districts of North Lancashire, Westmorland and Cumberland; they are scarce in Wales and in Scotland, though at one time there were a fair number in Inverness-shire. The pine marten is so shy a creature that it is seldom seen alive by man, but, unfortunately, it is easy to trap, and it is difficult to doubt that this beautiful and graceful creature is on the road to extinction, even in its wildest haunts. I have never seen one alive except in the Zoological Gardens in Regent's Park, where I used to watch a particular animal which would allow itself to be fed, and which I thought was one of the loveliest creatures I had ever been near.

The pine marten, although so called, is not devoted to the pine in preference to any other tree, but has merely gained the name since the Scotch pine happens to be a tree common in the districts it frequents. It is a creature of the trees rather than the ground, and chooses disused birds' nests or squirrels' dreys in which to bring forth its young, which, when born, are covered with white fur which in a short time becomes grizzled.

Other names for the marten are sweetmart—as distinct from the polecat, which is foulmart—mart, martern, martron, marteron, matron, and martlett. It is often referred to as a martern or matron in English medieval records, in days when it was regarded as a beast of the chase, as providing valuable fur, and even, perhaps, as an item in bills of fare. So steadily pursued, or even persecuted, was it even in those far-off days that it was thought in the sixteenth century to be getting scarce. William Harrison, Canon of Windsor, who prefixed a *Historical Description of the Island of Britain* to Holinshed's *Chronicle* in 1577, in referring to the animal as a beast of the chase writes that "for number I worthilie doubt whether that of our Beavers or Marterns may be thought to be the lesse."

"Mart Hunting" was a more or less common sport from the middle ages up to the beginning of the twentieth century. Daniel, in his *Rural Sports* (1807), after remarking that "the skin and excrements of this animal have an agreeable musky scent, and are free from that disgusting rankness which distinguishes the other species of this Genus, as the Polecat, etc.," writes that:

"The scent of the Martin is very sweet to Hounds, and it is the best animal to enter young Foxhounds at. The Martin, by running the thickest bushes it can find, teaches Hounds to run Cover, which is of infinite service to them; when closely pursued it climbs a tree, and its Agility is astonishing, for though it falls frequently from a tree into the midst of a pack of Hounds, each intent on catching it, the instances are very *few* of a Martin's being caught by them in that situation. They are not found in any great numbers; the most ever met with

Plates 40 41

Top: BECOMING YEARLY RARER: THE PINE MARTIN.

Bottom: A COMMON MARAUDER: HUNTING STOAT.

by the Compiler, was in the large woods near Rayleigh, in Essex."

Martens are not less hungry animals than the rest of their genus, but they have not the ferocious thirst for blood which distinguishes the polecat. As with the polecat, the marten's favourite food seems to be rabbit, but it catches pheasants, partridges, grouse, blackgame, squirrels and other small mammals, small birds of various kinds, and occasionally poultry and lambs. In the *Zoologist* (1881, p. 89) there is an astonishing account of a marten attacking a sheep and losing its own life in consequence. It is related by Mr. O. H. MacKenzie, and the incident took place in the Forest of Morsgail in 1875:

"I suddenly came to a place where there was a lot of wool scattered about, and there was every appearance of there having been a struggle between a sheep and some other animal. I knew there were a few stray sheep in the forest, but knowing there were no foxes in the island we thought this sheep must have been attacked by an eagle. I continued my stalk. About one hundred yards from where we found the wool I came upon a large Cheviot wedder lying dead, with its head down hill and its shoulder jammed up against a stone which was sticking out of a bank. In passing I gave the forequarters of the sheep (which appeared to have been dead about a fortnight) a kick, and under its shoulder and neck lay a dead marten. The wedder in rushing madly down hill with the marten at its throat had dashed itself against the sharp stone which killed the marten. The sheep's throat being cut, it had not had strength to get upon its legs, but bled to death where it lay."

So be it; the marten kills rabbits, squirrels, game, even a sheep. But its beauty and its grace entitle it to a better fate than hunting or the steel gin. It is the wildest life of the woods, and I wish it were protected by the law.

THE STOAT [*Mustela erminea*]

No other, I think, of our British mammals, except the weasel, has so long a list of local names as the stoat. J. G. Millais gives the following: Foumart, Fomart, Clubster, Clubstart (Yorkshire), Lobster, Lopstart (Norfolk), Weasel (Suffolk), Clubtail (Lancashire and Lincolnshire), Royal Hunter (Oxford), Hob, White Weasel (English), Big Weasel, Weasel, Whittret (Scotland).

As for the derivations of these names, "Clubster," "Clubstart," "Lobster," and "Lopstart" evidently refer to the stoat's short and stumpy tail. "Hob," I take it, is affectionate vernacular, akin to rob, robin, hobgoblin. "Royal Hunter" I imagine refers to the ermine worn by royalty; and "whittret," I should guess, is a corruption of "white-throat," which is a local name for the weasel. And as to "ermine" itself, the philologists are not agreed. The Oxford English Dictionary refers us to O.F. *(h)ermine* and O.F. *hearma*, but makes the further suggestion that there may be a derivation from *Armenius* (*mus*), the mouse of Armenia. Sir Harry Johnston finds possbilities in a Lithuanian word *sharmu*, and as to "stoat" he has no doubts. "It was called the Stoat, or Stot Weasel, meaning the bigger, more pushing, energetic of the two beasts. 'Stoat' is derived from a Scandinavian and Low German root represented by the Gothic *stautan*, to push. It was a term often applied to male animals in general, and is met with in dialectical English (*stot*) in the sense of a stallion, or a young bullock."

The long, slender shape of the stoat is too familiar to need description. In summer its coat is reddish brown above, and white or white tinged with lemon on the under parts. In winter the reddish brown turns to pale brown, except in the north of Scotland, where the change is to complete white, or white with a touch of lemon. Throughout summer and winter, north and south, the tip of the tail remains black, and it was this sharp contrast of white and black, no doubt, which pleased our ancestors and brought ermine into the royal fashions. It is rare for a stoat to change to white in the south of England, but I once saw a white ermine in winter, near Chilworth, in Surrey, during the War.

In size and weight stoats vary considerably. Males are bigger than females. A male stoat may measure, from nose to tip of tail, 15 to 26 inches, of which the tail will be from 5 to 6½ inches, the last 2 inches or more being plumy black hairs. A female will measure from 13 to 20 inches. Males weigh from 5 to 10 ounces, and females less.

Stoats frequent rough banks, stone walls, hedgerows, any wild place providing holes and shelter. A favourite place for a stoat to nest or sleep is under a woodstack, and this habit once in my experience led to a curious incident of trapping. A keeper had set a trap for stoats under a stack by a ride in a wood near my house, had caught two stoats and set the trap, unbaited, for a third. On visiting it he found an adder caught just behind the head. It was the largest adder I have ever seen, and measured just over 29 inches.

A stoat hunts its prey by scent and by sight, and can move fast in pursuit, trotting or leaping. Its food consists of animals and birds from hares and turkeys downwards, and its ferocious attack is directed always in the same way, at the neck of its victim, biting down to the arteries. It likes to leap out at birds and rabbits, and will kill for pure pleasure, leaving the bodies uneaten. The damage that a stoat will do in a rearing-field of young pheasants must be seen to be understood. Mother stoats teach their young to hunt, and a very pretty sight they make, leaping one after another through the grasses. But in a rearing-field! Two years ago, in the summer of 1933, I saw what was done by a pack of hunting stoats. The pheasant coops stood in clearings among high grass, and the young birds had been given their morning feed. An assistant who had been entrusted with the duty of feeding them at midday found a young bird lying dead in the grass, then another and another. The full count of the young birds which were killed between the two feeds was ninety-seven.

Stoats hunt not only on land but in water. They will kill not only water-voles but swimming birds, and have been seen to attack young water-hens and ducklings. They are strong swimmers, and I am told—for I have never had the luck to see one swimming—hold the head high out of the water. They will even take to the sea. J. G. Millais was told by the captain of a steamer plying between Oban and Lochmaddy that he once met a stoat swimming strong and high in the Minch four miles from the island of Rhum, and heading for the coast of Scotland. "It seemed in no wise disconcerted by the steamer, and pursued its way over a calm sea." Millais also gives two instances of the stoat's courage and pertinacity in swimming on and landing where it has decided:

"I have myself thrown stones at a stoat which was approaching the bank where I was fishing, and been unable to prevent its landing almost at my feet, when it immediately disappeared amongst the undergrowth. I well remember another amusing instance of this. My father (*i.e.*, the late Sir John Millais) was sitting at luncheon one day on a bank of stones near Delvin on the Tay. He tried to intercept a stoat that was about to land on the shingle. At about 15 yards from the shore my parent began hurling stones at the gallant voyager. The bombardment increased on the nearer approach of the enemy, and finally the brave little beast, chattering and showing its teeth, rushed between my father's outstretched legs and away across the shingle to safety in the Stenton Woods."

I hope I shall some day have the luck to see a stoat swimming; it shall land without stones. The creature's ferocity is unquestionable, but it has other interesting, if not engaging traits in its character. One is its perseverance and energy in dragging about its victims when they weigh far more than itself. I remember in particular a morning late in November on the Hampshire border. We were shooting pheasants, and there had been snow in the night. I was walking down a ride, and came to a flattened, muddy patch in the snow, of which there was no mistaking the meaning. From the mud and blood in the snow there led a 4-inch wide track shadowed grey in the low sunlight. I followed it down and across the road, almost lost it where the snow lay in powder on chestnut leaves, picked it up again crossing another small path, and eventually, 20 yards from where the stoat had killed, found the dead rabbit in a hollow under a chestnut stub. Probably the killer had been disturbed, or he would have dragged the rabbit further.

A good instance of this ferocious energy has been given in the *Field* by Mr. T. D. White:

"A stoat had killed a rabbit in the middle of a field which had a gentle slope downwards to some gorse bushes about 120 yards distant. I did not witness the tragedy, but when I came upon the scene the stoat was making great efforts to transport its victim to the shelter of the gorse below. There may be nothing uncommon in this, but its method of transportation was highly entertaining. The weight of the rabbit was more than the stoat could drag, but by taking the rabbit by the neck and wriggling its little body underneath, it just managed by stupendous efforts to move its victim a few inches at a time. After forty-five minutes (by the watch) this energetic little beast had transported the rabbit to a distance of about two gunshots. . . . The weight of the stoat was under 12 ounces, that of the rabbit 3 pounds 5 ounces; thus it had been shifting a dead weight more than four times its own."

Besides attacking animals and birds on the ground and in water, stoats will climb bushes and trees in hunting for young birds and eggs. I have more than once seen a stoat climbing in this way, and have surprised one in coming away from a bird's nest which it had robbed. What I have never yet seen is behaviour which has been described by more than one writer, and that is a stoat mesmerizing birds by its antics, as has been described by Millais and illustrated in a sketch, showing a stoat executing somersaults with its nose by its tail, like an animated whiting, in order to fascinate young thrushes watching. This I should guess to be play rather than intentional cunning, for I have not heard of a fatal ending to the performance—the birds fly away. But stoats are playful little creatures when not hunting, and Mr. C. B. Moffat in the *Zoologist* has given a delightful account of their gambolling. He watched three stoats on a June evening, playing in the road after rain:

"Great part of the game consisted in all three animals careering across the road again and again, frequently crossing each other, when they sometimes sprang high in the air and cannoned against one another, all evidently in the height of fun. Then there was a ceremony, which I could not quite understand, of pressing their noses on the bare ground and running along for a foot or so, making a slight grating noise, I do not know how; they all did this. Then they would play with one another like kittens, one chasing another, knocking it down, and running off crying 'curoo, curoo,' to be knocked down in its turn. And *one* of the three could turn as perfect a somersault as any boy I have seen, doing it, moreover, in exactly the same way—placing his head very deliberately on the ground as the first step, and then turning quite gracefully over, and righting itself just in time to avoid falling on its back, by standing erect on its hind legs."

After a little, one of the stoats ran up a tree, and left the others to begin a game with Mr. Moffat himself:

"The two stoats regularly set themselves to enjoy a game of 'Tom Tiddler's Ground' with *me*: it was the most barefaced piece of impudence that I have ever experienced from a pair of wild animals yet, although the hedgehogs up in the woods have often come thrusting their noses under my feet to see if there were beetles there; *they* took me for an old tree, so might be excused. But these stoats knew perfectly well that I was not a tree. Their game consisted in trying how near they dared to approach me: they would come side by side with a graceful and joyous trot straight towards me, like lambs or fawns coming to be petted; then suddenly both would turn tail and, whistling 'curoo, curoo,' rush off at full speed, almost tumbling in their desperate haste, fully persuaded I was after them; then discovering that I had stood stock still, they again came bounding along with the same agile grace and sociable expression, and when within a very few feet of the mysterious object fled again with the same expressions of wild alarm. Anything in the animal world so like the play of human children I could not have conceived."

Is not that pleasant reading? To gamekeepers first, and to game-preservers in a lesser degree, the stoat is an enemy. But to the community in general it is in many ways a benefactor, in that it destroys voles, rats and mice; and if it is a ferocious slayer, it is also a creature with its own beauty, confidence and charm.

Sometimes it seems to hunt mainly for amusement. Mrs. Charles Cornish has told me that on a winter morning, looking out of a window of her house in the country, she once watched a stoat hunt the length of a dry wall, pulling out and killing a number of hibernating frogs.

THE IRISH STOAT [*Putorius hibernicus*]

Not all naturalists accept this creature as a sub-species. But unquestionably it differs considerably in size and colouring from the English species. There is less white about the lower part of the face and neck, and the white of the chest is contracted to a narrow median line, or may even disappear, while it is also narrower on the belly. In length the male is less than 12 inches from nose to tip of tail—in fact, the male Irish stoat is smaller than the female English stoat.

In Ireland, before the War, the stoat used to be hunted with beagles—weasel hounds as they were called—a pack of ten couple, perhaps, black, white and tan, averaging 9 inches high. I was privileged one April morning to follow those little hounds, and a day or two before they met I questioned my Irish ghillie—I was a guest at a house on the River Lee in County Cork—as to the manner of hunting the weasel. "'Tis the very same as fox-hunting," I was told, and I asked whether many people followed the hounds. "They do, begorra. 'Tis the divil." "Where do they hunt?" "Sure, didn't I see them on the bank where your honour was fishing, and didn't they run four or five miles, thin?" But how, I asked, could a weasel stand up before any pack of hounds for even half a mile? And if he went to ground or dodged into a hole, what then? "Sure, isn't ut a ferrut they have wid thim? And don't they put him into the hole after him? And fwhin they've barsted him out of that, doesn't he run anodther mile? He does."

What the weasel hounds really hunted was the animal's drag. They were laid on near some spot where he might possibly have killed during the night, and having found the place of his kill, they hunted the line back to his home. And if they hit off the line, those little beagles ran fast enough to lose many of the field behind them. As for voice, you could take the word of the ghillie. "Sure, 'tis beautiful music. You didn't hear annything betther. Wouldn't ut bate the fox-hounds intirely?" And that was in the Muskerry country, so he meant it for a compliment.

And as for the species of the animal they hunted, the ghillie had his own description. "Sure, 'tis not a weasel at all, at all." What was it then? "Sure, there do be two kinds. Wan is a little grey fellow wid a white breast, and the odther is a big foxy fellow wid a bushy tail." I cannot vouch for the exactness of those descriptions, and I have sometimes wondered whether the "big foxy fellow" may not perhaps have been a squirrel. But all that was years ago, when Ireland was a happy hunting-ground for Englishmen as well as Irish.

Today, hunting men do not handle the Irish stoat to measure his length and his colouring, for there are no weasel-hounds to hunt him.

THE WEASEL [*Mustela nivalis*]

Even more local names belong to the weasel than to the stoat. Here is the list given by J. G. Millais in *British Mammals*:

Kine, Cane, Mousehunt, Beale (Sussex and other counties), Weasel, Ressel, Rezzela (Yorks), Mouse-hunter (Norfolk), White-throat (male), Mouse-hunt (Suffolk), Fair, Fairy-hound, Lonennan, Codnaqwidr (Old Cornish, on the authority of Harting) (English); Game Rat, Whitrick, Whittret, White-throat, Mouse-weasel, Futteret (Scottish); Neas, Nios (Scots Gaelic); Bronwen, Wenci, Waenci (Welsh).

To which I can add that in my own part of the world, the Sussex and Hampshire borders of Surrey, there are supposed to be two sorts of weasels, the weasel and the mouse-weasel. But I have been unable to discover any difference between the two that a countryman could point out to me; and I imagine that the difference is merely one of size, and that the male is the weasel and the female the mouse-weasel. After all, she is a very little thing to look at.

As to the derivation of these names, all that the Oxford English Dictionary can tell me about the word "weasel" is that in Old English it was *wes(u)le* and that it is of obscure origin. Of the other names, "cane" is the only one to be found in the Dictionary, which gives no explanation; but I take it that "whittret" and "whitrick" are corruptions of "white-throat," which obviously refers to the weasel's white bib, and "futteret" may be an allied corruption in Scotland. "Fairy-hound" is the best of all.

A male weasel measures 10 or 11 inches from nose to tip of tail, which may be 2 or 2½ inches; and a female weasel is some 2 inches shorter. It is paler in colour than the stoat, and its chin and under parts are pure white; it differs from the stoat in that it has no black tip to its tail.

Weasels in their habits are very like stoats, but the smaller animal naturally attacks smaller quarry. And except for the occasions when the temptation of pheasant chicks in the rearing-field proves too much for it, the weasel is definitely useful. Its food consists mainly of mice, voles and young rats, and so it is one of the farmer's best friends. As for game, it is only during the nesting season that the weasel can be dangerous, and for the rest of the year it is the relentless enemy of small rodents which if left to themselves would eat up the farm. No better evidence of its quality of a destroyer exists than the Report of the Committee which was appointed by the Board of Agriculture to investigate the cause of the plague of field-voles which infested Scotland in the year 1892. Some of the witnesses were gamekeepers and shepherds, and this is the reply of David Glendinning, a shepherd, to a question whether he had ever seen a weasel kill a vole:

"Yes; about three weeks ago I came upon a small brown weasel which had killed five in one of the sheep drains. I followed it up, and found it killing a sixth. A week past, on Sunday morning, I came down a drain for 250 yards or so. A weasel had been before me, and there were twenty-two dead voles in the bottom. I secured a specimen last night to show you the way a weasel destroys a vole. The blood is entirely drawn from behind the left ear. There is not a bit of the vole marked otherwise, except by the tooth marks on the head. All those I have seen were killed in the same way."

Just as a rabbit chased by a stoat seems to be paralyzed with fear and will sit down screaming and allow the stoat to seize it without attempting—or perhaps rather attempting in vain—to move, so a vole seems to lose its powers of movement when hunted by a weasel. In *Hampshire Days* the late W. H. Hudson has given a description of such a chase which admirably illustrates not only the terror of the victim, but the courage and persistence of the pursuer when he in turn is threatened by some power which he does not understand:

"I was on the hard white road between Beaulieu and Hilltop, when the little animal—a common field-vole—came out from the hedge and ran along the road, and knowing from his appearance that he was being pursued, I stood still to see the result. He had a very odd look; instead of a smooth-haired little mouse-like creature running smoothly and swiftly over the bare ground, he was all hunched up, his hair standing on end like bristles, and he moved in a series of heavy painful hops. Before he had gone half a dozen yards, the weasel

like rolls and somersaults." But neither of them saw the end of the play, for the birds flew away. And, as a fact, I have been unable to find any record of a weasel that has been watched in the act of catching a small bird, though there are various known instances of birds of prey and others seizing weasels and being attacked by them in turn. One of these fights is the subject of a well-known drawing by Wolf, "The Biter Bit," in which an owl has carried off a weasel, and is itself killed by its quarry.

Weasels, like stoats, sometimes hunt in packs, probably by night as well as by day, and there is an old West Country superstition that hares are hunted by night by packs of little fairy hounds, locally called "Dandy Dogs." But here we get to a confusing circle of thought. "Fairy" is pronounced "vairy," and the dictionary gives three meanings of the word "vair"—(1) a fur obtained from a variety of squirrel; (2) a weasel or stoat; (3) one of the heraldic furs. Then are the little hounds "vairy" or "fairy"?

White weasels are occasionally met with—on the walls of gamekeepers' cottages as often as anywhere, I should guess; and there are various records of albinos.

CHAPTER TWENTY-SEVEN

THE HEDGEHOG [*Erinaceus europæus*]

OUGHT the hedgehog to be classed among the enemies of game? Not, I think, in the sense in which we may call a wild cat or even a stoat an enemy. Perhaps we might put the hedgehog side by side with the badger. For I do not believe that either of them sets out deliberately in search of, say, pheasants' nests, but both of them, if they come across a clutch of eggs in their rambles, take the easy meal. One of the earliest of my recollections is the sight of a trap which the keeper told me was specially set for a hedgehog; I cannot remember its construction exactly, but I know he caught many, and ended them with his boot, as was the fashion with keepers then; but he was one of the old school, and divided the animal world into two classes, of which one was game.

Hedgehogs were in this world, in shape and form as we see them today, before men and women walked in Eden. They existed in the Miocene period of the Tertiary Epoch, which means that hedgehogs were eating insects in Europe millions of years before Man first walked upright in Asia. And it must have been early in its evolution that the hedgehog developed its coat of prickly spines, and its habit of tucking its nose into its belly and rolling itself up into a ball, or a creature which only a few years ago used to be eaten by gypsies could not have survived. As it is, only human beings can kill hedgehogs, though there are country stories of badgers with long claws that can unroll the spiny ball, and of foxes which push the ball down steep banks so as to open it with the shock of falling—stories which may be true, but are not easily verified.

Hedgehogs nest in such places as old rabbit buries, and the young, four to six, are born blind, almost naked except for weak white prickles. The statement has been made that on the approach of winter they find hiding-places as in dry hollows under leaves, for instance, where they sleep through the winter. That is no doubt true of hedgehogs in general, but not all hedgehogs hibernate in this way, for hedgehogs have been seen about even when there is snow on the ground. Like squirrels, some of them seem to wake at intervals—as, for that matter, do dormice.

Hedgehogs eat any kind of insect food—even cockroaches—with slugs, snails, spiders, frogs, mice, moles, and snakes—even adders. They are extremely fond of eggs, which brings them into the bad books of gamekeepers. They also like milk to drink, and there may be more truth than we should suppose in the old country yarn that hedgehogs will suck milk from the udders of cows lying in a field. The warmth and weight of the cow's body might bring worms to the surface of the grass, and when a cow is full of milk her udders ooze milk. At all events, there are countrymen who firmly believe what other countrymen have told them they have seen.

And that hedgehogs are fond of milk I know from an adventure of my own with a hedgehog years ago. I was living then at Weybridge, and my wife and I were sitting one evening in the drawing-room, which had a door opening straight into the garden. We heard an animal sneeze, somewhere in the room, and found that the sneezes came from behind a writing table in the corner. There, behind the writing table, was a hedgehog, which was not the least perturbed at being discovered. My wife fetched it a saucer of milk, which it drank, and having drunk the milk it walked out into the garden and disappeared. Some months later it walked confidently into the kitchen, was given a saucer of milk by the cook, and walked out again.

CHAPTER TWENTY-EIGHT

THE BROWN RAT [*Mus decumanus*]

WHEN James Harting, in 1883, put together his *Essays on Sport and Natural History*, he devoted a chapter to the Old English Black Rat. It was mainly a summary of the last places in which an animal had been known to occur, which was believed to be almost extinct. And in his *Mammals of Great Britain and Ireland*, published in 1905, J. G. Millais wrote that "over the whole of the interior of England the Old English Black Rat may be said to be extinct in the broad sense of the word." He added that the Docks and the streets of that neighbourhood were favourite resorts of the Black Rat, and that it was numerous at Yarmouth.

But I doubt whether either writer would have expected to be told what I believe is the truth today, that in every port town in this island the black rat outnumbers the brown. And it does so owing to a curious chain of circumstances. The black rat is a cleanly animal, and likes lodgings high and dry. The brown rat is an animal that lives underground, that flourishes in dirt and filth, that infests sewers, and can be trapped. The brown rat is *hostis humani generis*, and every man's hand is against him; therefore his numbers do not increase in proportion to the prolificacy of his females. The black rat, on the other hand, has been given by man himself every facility for increasing his numbers and his range. It prefers roofs and attics to sewers, and it travels from one to the other on the overhead cables which modern science has added to the equipment of men's town houses. And so in London, when the cellars and sewers seethe with multitudes of the brown rat, the moon looks down on the slates and wires of the city alive with the black rat.

And the black rat, all the while, is the carrier of bubonic plague; and if bubonic plague were once abroad in London, who should guess the end? And London grows.

And the black rat is urban, of the town, and the gamekeeper has nothing to say to him. The brown rat, on the other hand, taking for its food not only the produce of the fields but young rabbits and the eggs and young of partridges and pheasants, is the enemy of farmer and gamekeeper alike, and it falls to the lot of the keeper, by some unwritten law of the countryside, to do the farmer's work as well as his own, and kill the rats.

Brown rats, left to themselves, would increase in prodigious numbers. A writer in the *Field*, Mr. Bristow Noble, who had made a special study of their breeding habits, has found young rats in every month of the year. As for numbers, the litters vary. "In some we find as many as seventeen, whilst the smallest litter contains no less than eleven; but thirteen may be put down as the average number in a litter. Strange to say, in every family there are always more males than females. Thus a litter of thirteen is invariably found to contain seven males and six females. The field rat 'casts' about every six weeks; and a young doe has often been found with a family when it has been estimated that she has not been more than three months old. Consequently, if we take for granted that the field rat has a litter eight times a year; that she gives birth to her first litter of the year on January 1st; that each litter is composed of thirteen rats, seven males and six females; that each female born within the year has a litter when she is three months old, and subsequently a litter at the end of every six weeks, by the end of December we find that one rat will have been responsible for the birth of the enormous total of 35,044 rats, which number on the very next day will have been increased enormously. What wonder that the country is over-run with the pests?"

Fortunately, rats are not allowed to increase in such numbers. But it is doubtful, even as things are, when we have "rat weeks" specially set aside for their destruction, whether the full amount of damage done by rats is realized. It is only by accident that such damage can be calculated, as, for instance, when old buildings are pulled down and we can count and measure. When the Gaiety Restaurant, some thirty years ago, made room for new buildings in the Strand, it was a strange sight to see rats in dozens moving about among the broken brickwork of the basement, and as the workmen took down the walls the accumulated mischief done by the little beasts was almost incredible. Behind the wainscot of the bandstand they found 1,729 serviettes torn to pieces, and some thirty to forty wine and beer bottles had been piled together to form a sort of dormitory. That was only part of the damage done in a single building. I wonder what would be revealed if some day we rebuilt the whole of the neighbourhood of Covent Garden.

A brown rat measures 15 to 16 inches in length, from nose to tip of tail, and the tail is only a little shorter than the body. But rats may grow to a far greater size. I believe the largest rat recorded in the *Field* was an old buck killed at Claxton Hall in Yorkshire, which measured 20 inches in length and weighed 2¾ pounds. The largest rat which I myself ever saw I was not able to measure. It was in June, 1909, in the Zoological Gardens in Regent's Park, where I had been given permission to spend the night. It is hardly dark from sundown to dawn in June, and in the half-light one may be deceived as to size and distance, but I saw this rat running down a path with other rats, and among them it looked as large as a rabbit.

AMONG BOULDERS AND BRACKEN: THE OLD FOX.

CHAPTER TWENTY-NINE

THE COMMON FOX [*Canis vulpes*]

SO many books have been written about the animal on whose existence depends our leading national sport, that I propose to add nothing here except in reference to its influence on another sport, that of shooting. The fox is the chief enemy of British game birds; and where the sporting industry, so to speak, of the countryside is hunting, it cannot be expected that gamekeepers should be care-free in their lawful occasions.

Still, foxes and pheasants can be encouraged on the same estate. Not always without a certain shutting of the eyes, or let us say pardonable concealment; but the thing is possible. I remember a January day not long after the War when I was a guest at a country house of which the owner held decided views as to preserving foxes. His coverts were large and well stocked with pheasants, but foxes were encouraged, at all events within limits; there was a new Master coming to the country, and he was to be welcomed. I think we saw eight foxes that day, and my host remarked thoughtfully at the end that had he known there were so many we might perhaps have shot one. But my chief memory is of a fox which cantered confidently out of covert, picked up a pheasant lying in the open, and went back with it into the wood. I spoke to the keeper afterwards and told him that I thought he was very kind to foxes. He said something about a spade.

Gamekeepers have various devices for keeping foxes away from rearing-fields and sitting partridges. An old-fashioned keeper's dodge was to place old iron, such as rusty chain, near the nest, but that was only possible when nests were few. Discs of luminous paint, placed with the paint away from the nest, are another form of protection, and some keepers believe in the sprinkling of chamber-lye near a sitting bird, or the dressing of pegged string with one of the compounds sold for stinking out rabbits. But this has been found to work, so to speak, both ways. There are owners of partridge shoots who will tell you that foxes get to know that stinking string or soil is a certain indication of nests in the neighbourhood, and that they will hunt till they find them. Laying out a dead rabbit or pigeon, in the same way, has sometimes led to results different from those intended; the dead rabbit may attract other visitors, or if one fox takes it another may hunt for it and so discover a nest instead.

The real fact underlying the difficulty of inducing a fox to keep away from this or that neighbourhood is, I think, that a fox is an animal of varied tastes, and likes and searches for change of diet. Foxes are no doubt fond of rabbits, but they will not keep to rabbits as their sole form of food. Any kind of bird, from poultry and pheasants downwards, rats, mice, frogs, beetles, grubs, worms, shellfish, crabs—all come alike to the fox's gullet. And, of course, a fox enjoys carrion. Through this taste a vixen enabled me, in the spring of 1933, to discover an earth to which she had only just removed her cubs; the keeper believed she lay in another earth. One morning I was brought, in a box fastened to a bicycle, a fox cub about six weeks old, which had been picked up about two miles away in the road under a dry wall which held up a high bank. It was very unhappy and seemed only anxious to hide, so we set off to the place where we were told it had been picked up. High on the bank one of us at last spied a dead rabbit—dead long since. Above it, under the roots of a tree, was a hole. To the hole the cub was introduced; it went down without hesitation, and from the darkness there came up to us the faint sounds of its welcoming by its brothers and sisters.

Plates 45 46

BEFORE THE OPENING DAY: LEARNING HIS WAY ABOUT.

Bottom: FOX CUBS: A FIRST APPEARANCE IN PUBLIC.

CHAPTER THIRTY

SEALS

The Common Seal (*Phoca vitulina*); The Grey Seal (*Halichœrus grypus*).

I. THE COMMON SEAL [*Phoca vitulina*]

TWO chapters in a book which has long held an honoured place on my bookshelf, *Autumns in Argyllshire with Rod and Gun*, by the Hon. A. E. Gathorne Hardy, are devoted to the pursuit of seals. That fact justifies, I think, the inclusion of a chapter on seals in this book, though I myself have never had any ambition to lift a rifle at them. But one of Mr. Hardy's chapters vividly describes the difficulties he went through in getting the trophy he wanted, which was the dappled pelt of the creature for his study floor; and there are doubtless others who share Mr. Hardy's outlook as to the pursuit of an animal, as he says, "so well protected both by its senses and its surroundings."

In ground colour the hair of the common seal is pale yellow mingling with white, sometimes with a mixture of grey or light brown, and spotted with shining black. The head, like the otter's, is round and short, and the eyes are very large. The upper lip is thick, and in it are set the long, thick vibrissæ. The fore limbs, or flippers, are furnished with strong claws, and the hind limbs, which are only used in the water, have smaller claws. The length of the male may be 5 feet, but the female is sometimes not more than 3 feet.

Common seals begin breeding in September, and the single young one (there are sometimes twins) is born in June. At first it is covered with soft lemon-white fur, but this is soon shed, and the little animal becomes a miniature edition of its parent, though more brightly marked and spotted. The mother has four mammæ, and suckles her baby lying on her side.

Seals are rather noisy creatures, and as they are gregarious and love to bask in numbers on the rocks, their barking and grunting, when they have the rocks to themselves, can be heard at a considerable distance. Young seals bleat. The seal's brain is large, and it is a creature of great intelligence, capable of great affection for a human being. Seals are attracted by musical sounds, and Sir Harry Johnston quotes an old writer to the effect that when the church bells of Hoy, in Orkney, were rung, the seals would swim to the shore.

Seals feed on fish and crustaceans, and it cannot be denied that they cause much havoc among salmon at the mouths of rivers. But to watch a seal fishing is delightful. Off the coast of Pembrokeshire, when I have been fishing for mackerel and bass, I have had a seal hunting close to the boat, and coming up at intervals to look at me fearlessly with its dark, blue-brown eyes, almost as if for the day it was my dog.

II. The Grey Seal [*Halichærus grypus*]

This and the common seal are the only two British species. The grey seal is much the larger animal, the male measuring sometimes as much as 11 feet, while the female may reach 7 feet 6 inches. The average length of both sexes is less than these measurements.

Its breeding habits are different from those of the common seal. Breeding begins probably in February, and in September or October or November the single young one is deposited, if possible, on the floor of a cavern only approached by water. The young seal at birth has a long, soft, white coat, which it keeps for six weeks, during which time the mother suckles it. The coat then is shed, and the young seal is covered with yellowish white hair, marked and blotched on the upper parts with blackish brown, while the flippers are spotted with black. Gradually the yellowish-white darkens and the markings fade, until as an adult the creature is almost uniformly greyish brown, with a lighter tint on the belly.

The grey seal is the largest and finest of our mammals, and is not so numerous as the common seal. Its breeding grounds range from the Hebrides to the western islands of Ireland, the coast of Cornwall and the Scilly Isles. There was a time before the War when the grey seals of Haskeir, an island of the Outer Hebrides, were subjected to a horrible form of persecution at the time when the mothers were ashore with their cubs. The local crofters and fishermen, to get blubber from the seals, would row or sail out to the island and club the mothers by hitting them over the nose, which produced internal hæmorrhage. The cubs were left to die. This hideous business so incensed a friend of mine, the late Major Hesketh Prichard, that he put aside all other work until he had succeeded in interesting Members of Parliament sufficiently to secure the passing of the Grey Seals Protection Act of 1914, which ensured—for some years at all events—that the grey seals in their breeding season should be left at peace.

But not permanently. The Grey Seals Act comes up periodically for examination and reconsideration, under the provisions of the Expiring Laws Continuance Act, and it is left to the discretion of the Minister of Agriculture and Fisheries to make local Orders, if he thinks fit, for the reduction of the numbers of grey seals should they appear to be causing damage to sea-coast fisheries. Such an Order was made in the spring of the year 1934, on the petition of the Sea Fisheries Committee of the Cornwall County Council, and early in the session which opened in November of that year, the Minister of Agriculture and Fisheries, in answer to a question put by Sir Basil Peto, the Member for Barnstaple, stated that in consequence of complaints made by Cornish fishermen the Sea Fisheries Committee of the County Council of Cornwall decided "to undertake a demonstration of humane methods of destroying seals." These humane methods consisted apparently in appointing marksmen armed with ·303 rifles to shoot the seals, of which they accounted, up to September 1st, when the close season for grey seals began, for seventy-one, grey and common. Nor was this the end. A few days later, in answer to a further question, the Minister informed Sir Basil Peto that he had unfortunately been mistaken, and that the number of seals killed up to date was not 71 but 177, of which 106 had been killed during the close season for grey seals, which began on September 1st. Further questioned as to whether he intended to impose any penalties on those who had broken the law in this flagrant way, the Minister replied in effect that he had no intention of doing so.

How many grey seals were included in the 106 seals killed during the close season of 1934, when the mothers were suckling their cubs, we shall probably never know, for no record seems to have been kept. But even this was not all the story. The allegation was made in the public press, and was apparently supported by evidence, that the Cornish fishermen used methods in destroying seals of an incredibly brutal character; so that it seemed as if the "demonstration" by which the creatures were subjected to rifle fire could properly be described as "humane" in comparison. But there seems to have been no full investigation as regards the allegations made, and the whole proceeding remains one of the strangest stories of officialdom, in its contact with matters affecting our British fauna, which exists in the annals of Sea Fisheries Committees or of Whitehall.

CHAPTER THIRTY-ONE

EAGLES—FALCONS—HAWKS

Order.—ACCIPITRES.
Family.—FALCONIDÆ.

Genus Circus—Marsh Harrier (*C. æruginеus*); Hen Harrier (*C. cyaneus*); Montagu's Harrier (*C. cineraceus*).
Genus Buteo—Common Buzzard (*B. vulgaris*); Rough-legged Buzzard (*B. Lagopus*).
Genus Aquila—Golden Eagle (*A. chrysaëtus*).
Genus Haliaëtus—White-tailed Eagle (*H. albicilla*).
Genus Accipiter—Sparrow Hawk (*A. nisus*).
Genus Milvus—Kite (*M. Ictinus*).
Genus Pernis—Honey Buzzard (*P. apivorus*).
Genus Falco—Peregrine Falcon (*F. peregrinus*); Hobby (*F. subbuteo*; Merlin (*F. æsalon*); Kestrel (*F. tinnunculus*).
Genus Pandion—Osprey (*P. haliaëtus*).

MARSH HARRIER [*Circus æruginеus*]

SOMETIMES called the Moor buzzard. Only once have I seen the nest and eggs of a marsh harrier, and I believe that in the year in which I saw them the nest was the only marsh harrier's nest in the British Isles. The marsh harrier is a bird of the fens, and that year, although there were other marsh harriers on the Broads, only one pair nested. I shall always remember that day with gratitude; I was a guest taken to see the sights and hear the sounds of the bird sanctuary established by Lord Desborough at Hickling. On that day and the next I heard bitterns boom; I was shown bearded tits' nests, and a garganey teal's; I saw a black tern, and was taken by my host, with the watcher, Jim Vincent, as guide, to see the nests of a marsh harrier and Montagu's harrier.

The marsh harrier is a big hawk, almost as big as a buzzard, but lighter and more graceful in flight. The adult male is mainly brown, with a paler head and breast; there is grey on the wings, and the tail is grey. The female is brown almost all over. The young are brown with buff heads. The nest is substantially built of reeds, among reeds, high off the surface of the marsh, and from three to five eggs are laid—there were four in the nest I saw—of a pure bluish-white.

The food of a marsh harrier is small or young birds and animals, eggs, frogs and reptiles. Harriers get their name from the methodical way in which, like hounds, they quarter the ground in search of their prey.

HEN HARRIER [*Circus cyaneus*]

Other names are the Blue Hawk, the Dove Hawk (male), the Ringtail (female), and, in Ireland, the Chicken Hawk. This is not so rare a bird as the marsh harrier, for it belongs to the moor and the hill as well as the marsh, and so has not suffered so greatly in numbers by the reclamation of the fens. It is commoner in Scotland and Ireland than in England and Wales. The male is mainly light grey, with white under parts and thighs; the female is light brown, with a barred tail that gives her the name ringtail. The immature birds are like the female. As its name chicken hawk implies, it will take young poultry and game, sometimes on the wing; it also preys on leverets and young rabbits, mice, frogs, and lizards. The nest is a slight structure built in heather, and there may be four, five or six eggs, bluish-white, sometimes stained and spotted with faint reddish-brown.

MONTAGU'S HARRIER [*Circus cineraceus*]

Also called the Ash-coloured Harrier. This bird at a distance resembles the hen harrier, but a closer inspection shows that the grey plumage is darker, there is a dark bar and a dark tip to the wing, and the white under parts are marked with pale reddish-brown. These differences were first pointed out in the early part of the last century by a naturalist then well known, Colonel Montagu. It was Yarrell who, in his first edition of his *British Birds*, published in 1839, suggested that as certain Continental naturalists, among them Temminck, had called the bird *Le Busard de Montagu*, "as a tribute to the discernment of our English Ornithologist, there was no good reason that Montagu's own countrymen should not now adopt this complimentary memorial." Yarrell goes on to observe that as Montagu himself, "either by mistake or error of the press," had named the bird in three separate places in his

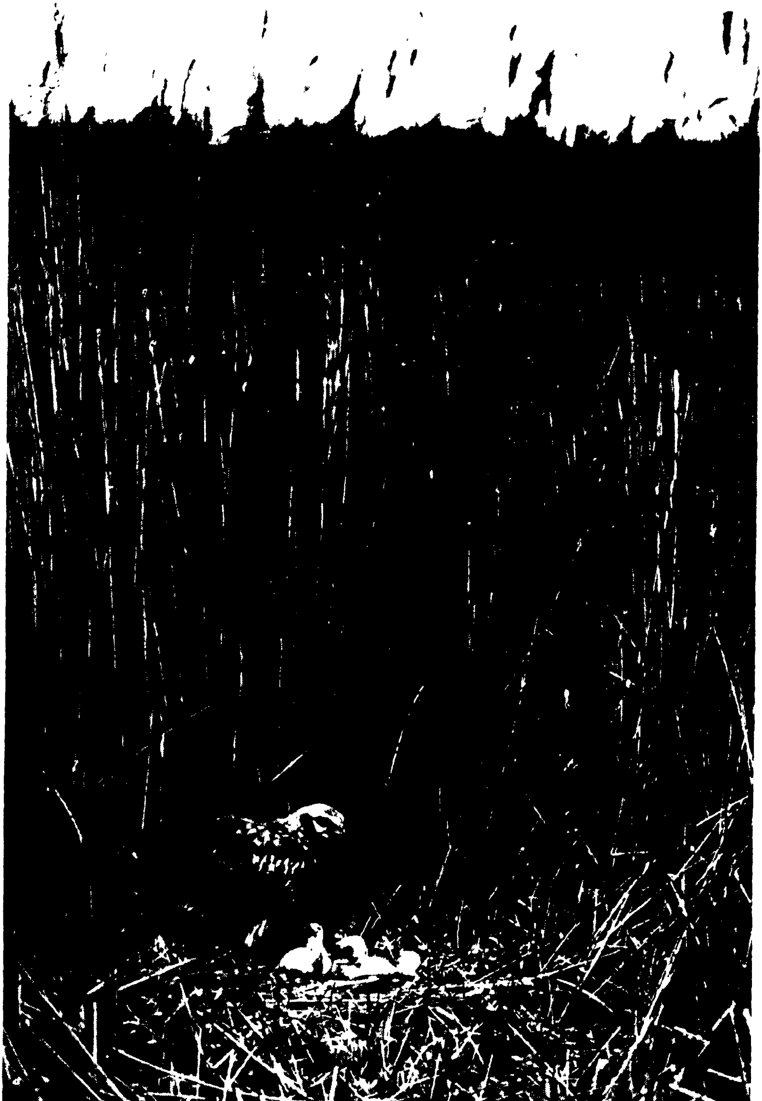


Plate 47

ONE OF THE RAREST OF BREEDING BIRDS: MONTAGU'S HARRIER.

own writings *cineraceus*, *cinerarius*, and *cinerareus*, "it will be an advantage, as well as a gratification, to call this bird in future Montagu's Harrier, and *Circus Montagui.*"

This harrier's habits much resemble those of the other two. Sometimes it builds a biggish nest among reeds, sometimes a slighter structure in heather. There may be four or five eggs, like those of the hen harrier.

COMMON BUZZARD [*Buteo vulgaris*]

A country name is Puttock. I hope that the numbers of buzzards nesting in this country are increasing. They are persecuted by egg collectors, but more and more landowners today give them protection, and forbid their gamekeepers to shoot a bird which preys on nothing more valuable than young rabbits, small birds, mice, moles, reptiles and insects. A buzzard is a bird which hunts in the grand manner, sailing and circling on broad, round wings, and alighting rather than stooping on its prey. It is not often to be seen in the tamer parts of the country, but in the Welsh mountains, in the Lake District and the Highlands, as well as along the coasts of the Bristol Channel, it is one of the fine sights of the countryside. Its cry is a wild whistle or mew. In Scotland it chooses for its nesting-place a high ledge among the rocks, but it does not always select a position difficult of access, and its nest is often robbed by gamekeepers. In England it prefers the fork of a big tree, where it builds a bulky nest of sticks lined with leaves and wool. The eggs are three or four in number, large and round. They vary much in marking, some of them having the ground colour of dull white flecked with small stains and smears, and others splashed and streaked with rich red-brown.

Buzzards are assiduously attentive to their young, and the female has strong motherly instincts. Yarrell quotes as an example the behaviour of a buzzard kept in the garden of the Chequers Inn at Uxbridge. She began by collecting all the loose sticks she could find, and her owner, noticing what she was doing, gave her materials with which she built a nest, and when she had built it, gave her two hen's eggs, on which she sat, to bring up in due course the two chicks. After that she hatched a brood every year. One summer, to save her the trouble of sitting, she was given some newly hatched chickens, but she destroyed the lot. She used to tear and offer food to the chicks she hatched, and seemed disturbed if they turned away from it to pick up grain.

It is not easy to describe a buzzard's plumage with exactness. The upper parts are dark brown, edged with paler brown on the wing-coverts, and barred with paler brown on the tail. The head and cheeks are lighter in colour and streaked longitudinally with dark brown. The breast is greyish-white, tinged with pale brown towards the thighs, and streaked and spotted with dark brown. The beak is bluish-black, and the cere yellow; the eyes are usually brown. The legs and feet are yellow, with bluish-black claws. But buzzards vary greatly in their plumage and in the distribution of light and dark colour. In a recent number of the quarterly *Countryman* there was a photograph entitled by the well-known falconer, Captain C. W. R. Knight, "The buzzard and its prey." On seeing it Major C. E. Radclyffe, who in his time has kept the largest falconry establishment of modern days, expressed the opinion that it was a peregrine. He suggested that the Editor should consult Captain G. Blaine, "the greatest falconer of recent years." Captain Blaine decided that the bird was a buzzard.

THE ROUGH-LEGGED BUZZARD [*Buteo lagopus*]

This fine bird has very seldom been chronicled, and never lately, as a breeding species in Great Britain. It is a winter visitor from Northern Europe, and as its name implies, its chief distinction in plumage is that the tarsi, instead of being bare as in the common buzzard, are clothed with feathers down to the toes. Its plumage generally speaking is darker than that of the common buzzard, and its throat and neck are marked perpendicularly with lines of arrow-head-shaped dark brown patches. The upper tail coverts are buffish-white, with an angular brown patch near the tip of each feather. The fullness and softness of this bird's plumage enable it to travel through the air as silently as an owl, and with a slightly bolder flight than that of the common buzzard it will pounce on wild duck, rabbits, mice and frogs.

Plate 48

IN THE HEART OF THE FOREST: GOLDEN EAGLE, MALE AND FEMALE.

THE GOLDEN EAGLE [*Aquila chrysaëtus*]

Sometimes called the black eagle, because of the stripy golden-black mane of feathers on its neck, which shine or are dark in different lights. Otherwise the plumage of the bird's body is a uniformly rich, clouded brown, and a noticeable feature is the thick trousering of feathers which coats its thighs down to the white feathers of the tarsus above its toes. The golden eagle is, of course, the finest of all British birds, and would by now be rare if it were not for the protection afforded to it by the owners of deer forests in Scotland. Golden eagles prey largely on grouse, and no deer stalker wants to have his stalk spoiled by a pair of grouse clattering up in front of him and warning every wild creature within range of the presence of their enemy man. Stalkers, therefore, encourage the golden eagle, while gamekeepers, on the other hand, regard him when on the wing as the curse of the moor. When once that noble form climbs above the horizon, though it may be no more than a speck in the sky a mile or more away, every grouse crouches flat in the heather, and if there is a drive in progress, when the line of beaters nears the crouching covey the birds fly anywhere and everywhere low along the surface of the heather, to get into shelter elsewhere as soon as possible.

Golden eagles feed not only on grouse and ptarmigan, but on hares, lambs, the fawns of roe, and the calves of red deer. An eagle will sometimes attack a full-grown deer. In *Days on the Hill*, the author who writes over the signature "An Old Stalker," and who knew well Glen Isla and the forests at its head, describes the chase of two roe whom an eagle tried to drive over a precipice:

"While out one day I noticed two roe-deer grazing peacefully in a corrie towards the lower extremity of the deer forest. Then I saw an eagle appear, and, stooping, he dashed past quite close to them. The startled animals bolted away for some distance and stood evidently regarding the bird with amazement. But they were by no means done with him. Again he descended, and this time the roe-deer headed down the corrie. This course evidently did not fit in with the eagle's plans, for he met them in the face, and struck at them with his wing, but whether he hit them or not I could not make out. For a time these tactics went on until the roe-deer seemed to become utterly stupefied. The eagle now began driving them up the corrie in much the same way as a shepherd drives sheep, and the poor animals seemed incapable of resistance.

"It then dawned on me what the giant bird's intentions were. The corrie in which the roe-deer were was covered with grass and heather, but on the other side of the hill was a precipice hundreds of feet high. It was straight towards this that the eagle was heading the roe-deer. By and by the top was reached, and the actors in this strange drama passed out of my view."

He did not see the end, but it can be guessed. An incident of the same kind, which ended fortunately for the deer, was witnessed in the autumn of 1934 by a stalker on Sir George Bullough's deer forest in Rhum, and was described in a letter printed in the *Field* of January 19th, 1935. His stalker writes as follows:

"I must tell you about a very remarkable thing I saw on Monday in Glenshelister. We were after hinds and had left Geordie with the two ponies at the end of Pilot Mill.

"Donald and I found a lot of hinds and selected two to shoot. After we had shot and gralloched the hinds I sent Donald back for the ponies; meantime I went to a dry hillock and was spying across on the Kilmory Hill side of Glenshelister. Suddenly an eagle flew into the field I was spying, so I kept the glass on it for some time. While doing so I saw the eagle stoop at a calf and actually settle on the calf's back. The calf, of course, bolted for all it could go, down the hill towards the Glenshelister burn, and still the eagle hung on, with the wings half spread out. The calf, however, had not lost all reasoning, for after it had galloped madly on for at least 200 yards, it turned right-handed and made straight for a rock that was projecting out of the side of a knoll and lay down under it. Had the eagle not let go before the calf reached the shelter of the rock it must have got knocked off.

"The eagle settled on another knoll close by and was evidently waiting till the calf came out again, but I got the rifle loaded and raised the 300 yards leaf, and whether it was the report of the rifle or the whizz of the bullet it heard I don't know, but it hurriedly left the scene."

Although so noble a bird in flight, not all the habits of the eagle are noble. It will sometimes gorge itself with carrion so that it is unable to rise from the ground. There are legends, but they are nothing more, of eagles carrying off children.

An eagle builds its eyrie as a rule on the ledge of a precipice, occasionally in a tree. An eyrie, according to the Oxford Dictionary, is an "aerie," and the word is derived through the French *aire* ultimately from the Latin *area*, an open space. I cannot see the connection of this ultimate derivation, and much prefer Anthony Collett's explanation, which he gives confidently in his *British Inland Birds*, that the word "simply means 'eggery'." At all events, the nest is a mass of sticks, which is often used year after year by the same pair of birds, and is added to spring after spring, until it grows to an immense size. Two or three eggs are laid, which vary in colour, being sometimes like a dully shaded buzzard's egg, and sometimes richly spotted with lilac-grey and reddish-brown.

I have seen an eagle within a few feet of me, in a break in a mist which had come down upon my stalker and myself on the side of a hill in Perthshire. The wind blew a rift in the mist and there was the eagle, his wings wide-spread, in the gap of blue air. For a moment only; then the mist closed again. But I have been privileged to even closer acquaintance with the great bird. Captain C. W. R. Knight once brought to the office of the *Field* his tame eagle, which he had carried on his arm from his taxicab to the amazement of Chancery Lane. He gave me the bird to hold on my own fore-arm, and there it sat with its strong talons gripping my sleeve. I found it a curious sensation, to have that tremendous beak within a few inches of my eyes, but the bird never moved, and merely gazed quietly at me. I was not sorry eventually to give it back to its owner, for a golden eagle sitting on an outstretched fore-arm weighs as much as a large turkey.

WHITE-TAILED EAGLE [*Haliaëtus albicilla*]

When Gould put together his *opus magnum*, *The Birds of Great Britain* (1873), the white-tailed eagle largely outnumbered the golden. Today, because of the protection of the deer forests, the golden eagle flourishes, and the white-tailed eagle is reduced to a few breeding places on some of the Scottish islands. Occasionally a stray specimen is seen or shot on the eastern coast during the autumn migration from Northern Europe. The habits of both eagles are much the same, but in addition to preying on birds, animals such as hares, and carrion, the white-tailed eagle will seize fish in the water in the manner of the osprey. Young birds are uniformly brown in colouring, and keep their immature plumage until the fifth or sixth year, when the bird gets paler feathers on its head, and a white tail. The legs are not feathered on the lower part as in the golden eagle. The nest is placed in similar situations to that of the golden eagle, but has sometimes been found on some small island in a loch. The eggs, two in number, are dirty white, faintly stained with red.

Other names for the white-tailed eagle are the sea-eagle and the erne—the latter name derived from a stem similar to that of the Greek *ornis*.

SPARROW HAWK [*Accipiter nisus*]

How does the sparrow hawk manage to survive? I hardly know. Every gamekeeper's hand is against it, and so, if he means to defend his livelihood, must be every farmer's and poultry keeper's. The sparrow hawk is the acknowledged enemy of the small bird in every form, from thrush and blackbird to chicken and young pheasant. Yet this little hawk, so bold and dashing that you must admire it as a contemptuously gallant marauder, manages somehow to bring off a brood here and there every year, I think as a rule in woods where no keepers go. I have woods of this kind round me in Surrey; in fact, I live in a wide area where the sparrow hawk flies free, and though I recognize that the hawks which stoop at sparrows and other birds, including young pheasants, cannot be thought of with affection by all my neighbours, to me they are a fascinating sight of the countryside.

Sparrow hawks are sometimes called "blue hawks" by gamekeepers, because of their blue-grey backs, in contrast to the red-brown back of the kestrel, the "red hawk." An immature sparrow hawk, however, may be puzzling, as the back is not blue-grey but brown—a dull brown, not red-

Plate 49

IN THE SCOTS PINE: SPARROWHAWK AND YOUNG.

brown like the kestrel's. Another point of difference between the two birds is that the sparrow hawk's breast is barred transversely with brown, while the kestrel's is streaked and spotted sometimes like a thrush's. But I always think that the great difference between the two is in the eye. The sparrow hawk has a fierce yellow eye, and the kestrel a noble dark eye.

Sparrow hawks build in various trees, oftenest, I think, in spruce and fir, and the nest is placed at different heights from the ground: I have found it in a small spruce, and seen it at the top of much higher trees. It is a solid structure of sticks, lined with twigs, and the eggs, which may be five or six, vary in markings considerably; sometimes the ground colour is bluish-white, stained slightly with pale brown, but there is another type of egg which is a pale clear blue blotched and spotted with rich chestnut brown.

White sparrow hawks, according to Harting, are very rare, and up to the date of the publication of his *Handbook of British Birds* he knew of only three specimens, one shot near Elveden in 1851, another set up by a taxidermist in Newmarket in 1876, and a third in the collection of Mr. F. Bond in 1889. I can add a fourth, for in the autumn of 1933 and the early spring of 1934 a pure white female was to be seen in my garden and in the fields near the house. One day it dashed at a sparrow on a path close to the gardener. Two days afterwards when I was dressing in the morning I saw it perched in a cherry tree about forty yards away; I noticed that it had an orange beak, but before I could fetch my glasses to look at it more closely it had flown away. It was seen two or three times more, by my daughter and the gardener, once settling in a crop of roots, but before the summer it had disappeared, I hope to mate and survive, but I could never hear any more of it, from neighbouring keepers or anyone else.

KITE [*Milvus ictinus*]

When was it first recognized that the kite, once so common an object of the countryside as to give its name to a child's toy, had become a rare bird in England? Yarrell, writing in 1839, remarks that the bird "has now become comparatively rare," and puts its disappearance down to gamekeepers. Birch Reynardson, on the other hand, in his *Reminiscences*, chronicles the fact that kites were quite common about Alconbury Hill in Huntingdonshire between 1824 and 1829. Let us place side by side with those dates the year in which was published the earliest work on pheasant preservation—*Gamonia, or the Art of Preserving Game*, by Lawrence Rawstorne, which was printed in 1837. The decade between the time, then, when kites were common in the Midlands, and the date when they had become rare, corresponds to the period when the preservation of game first became generally studied, and when the first thought of the game preserver was to destroy any and every bird of prey. Since that date the kite has become almost extinct. Thomas Gould, writing in 1868, doubted whether there were five breeding pairs in this island, and in *A Handlist of British Birds*, published by Witherby in 1912, it is stated that the kite at that date was now confined to Wales, where only five birds were known in 1905, but that there were over twenty in 1910. I do not know how many nesting pairs there may have been in 1935, but I doubt if there are twenty kites alive in the country today. The last and worst enemy of the kite has been not the gamekeeper but the egg-collector.

Formerly the bird was one of the commonest of the larger birds in England. Harting in *The Birds of Middlesex* quotes Charles Lecluse, the French botanist who visited England in 1571, in the reign of Elizabeth, as observing that kites were then abundant in the streets of London, and that it was forbidden to kill them because they acted as scavengers. There are many references to kites in Shakespeare's plays. The name, applied to persons, was one of reproach, since the kite was regarded as a carrion-eater and a bird of ignoble character, preying on weakling victims.

> "Ravens, crows and kites
> Fly o'er our heads and downward look on us,
> As we were sickly prey—"

says Cassius in *Julius Cæsar* (V. 1.), and there is another reference to the kite's curious habits in *A Winter's Tale*, when Autolycus tells his audience that his "traffic is sheets; when the kite builds, look for lesser linen." This refers to its habit of carrying away washing put out by villagers to dry on the hedge, in order to line or to ornament its nest. Commenting on this sentence of Autolycus, Harting writes in *The Birds of Middlesex*:

"This line may perhaps be best illustrated by a description of a kite's nest taken in Huntingdonshire, and still in possession of a friend at Newcastle. The outside is composed of strong sticks; the lining of small pieces of linen, part of a saddle-girth, a bit of harvest-glove, part of a straw bonnet, pieces of paper, and a worsted garter; and in the midst of this singular collection of materials were deposited two eggs."

The kite's eggs are about the same size as a buzzard's, bluish-white streaked and spotted with reddish-brown. The bird has the same soaring and floating habits as the buzzard —it has another name, "glede," from its gliding flight—but on the wing may be distinguished from the buzzard by its long, forked tail.

HONEY BUZZARD [*Pernis apivorus*]

Today this bird occurs in Great Britain only as a rare migrant on passage. It was never common in these islands, though Gould, when in 1873 he compiled his *Birds of Great Britain*, believed that it was more numerous than formerly, and that if gamekeepers and egg collectors would only leave it alone, it might even be expected to re-establish itself as a not uncommon resident. But the years have proved his hopes to have been in vain. Before the days when gamekeepers began to be naturalists, the bird was unmercifully trapped or shot, though it is perfectly harmless to game; and during later years I fear that the egg collectors became too much for it.

The honey buzzard has a grey head and yellow eyes. Mainly grey-brown on its upper parts, its yellowish-white neck, breast and belly are spotted and barred with dark brown. But, like other buzzards, these birds vary in plumage, and Yarrell's description of its colouring differs considerably from Gould's painting. Its name of honey buzzard, *apivorus*, the bee eater, is derived from its habit of scratching out the nests of bees, or the comb of wasps' nests, and feeding on the grubs. It will carry off the comb to its own nest. If such a nest is ever seen again in England, it will be found to be a large structure of sticks, perhaps lined with beech leaves, and to contain two or three creamy-white eggs, blotched with reddish-brown.

PEREGRINE FALCON [*Falco peregrinus*]

This is the chief of the birds used in hawking, and in the language of the sport the male is the tiercel and the female, which as with other birds of prey is the larger, is called the falcon. In spite of its enemies, of which the egg-collector is one of the most relentless, the peregrine keeps up its numbers fairly well, particularly along the cliffs of the southern and western coasts. It nests not only in rocks and cliffs, but in trees, where it usually chooses an old crow's nest, and lays two to four eggs, very like a kestrel's in colour, freckled orange-red and chestnut-brown. It is a smaller bird than the buzzard, and much fiercer and swifter in movement; it will strike down grouse on the wing, and its stoop from high air is a splendid sight to see. It is one of the most dangerous enemies of homing pigeons, should they cross the sea, and there is no more exciting race to watch than that of the unhappy pigeon, flying for refuge to some rift in the cliff, and the fierce falcon which knows it must strike before the pigeon is close to the cliff wall.

Peregrines utter a sharp, repeated call. The mature bird is deep blue-grey above, with the breast and under parts buff-white barred with grey. The young birds are mottled brown above and yellowish-brown beneath, until the first moult.

HOBBY [*Falco subbuteo*]

Among the earlier letters which appeared in the correspondence published in the *Field* of 1934 and 1935 on the subject of egg collecting was one (September 15th, 1934) from a prominent egg collector who wrote that "there are hundreds of keepers in the South of England who shoot these beautiful little hawks whenever they get the chance." The *Field* asked to be given, either in confidence or for publication in the *Field*, the names and addresses of some of these "hundreds of

Plates 50 - 51

Top : PEREGRINE FALCON ALIGHTING.

Bottom : MERLIN WITH YOUNG IN NEST.

gamekeepers," but no reply with a name or address was received.

It is earnestly to be hoped that if there are even a few gamekeepers who are so wanton or so ignorant as to shoot hobbies, their employers will give strict orders that hobbies are not to be shot. The hobby is almost entirely harmless as a neighbour to game. It may occasionally stoop at a young pheasant or partridge, but its beauty and interest far atone for these occasional lapses—if indeed a natural act can be called a lapse. Otherwise its main prey is small birds, such as starlings or larks, or even swallows. It also feeds largely on dragonflies, cockchafers, beetles and even butterflies. It is a summer migrant, arriving in May as a visitor, chiefly to the woodlands of the South Country, about the time when the trees are coming into full leaf, and in June it chooses its nest—usually an old crow's or magpie's—high in a tree. The eggs are very like a kestrel's in colour and size, and since kestrels, too, will sometimes choose an old crow's nest to recondition, any youthful climber of trees to identify the egg must identify the parent bird.

The hobby is dark grey above and the breast is white, streaked with black; the under parts are pale orange. The wings are long, and the flight is swift and graceful.

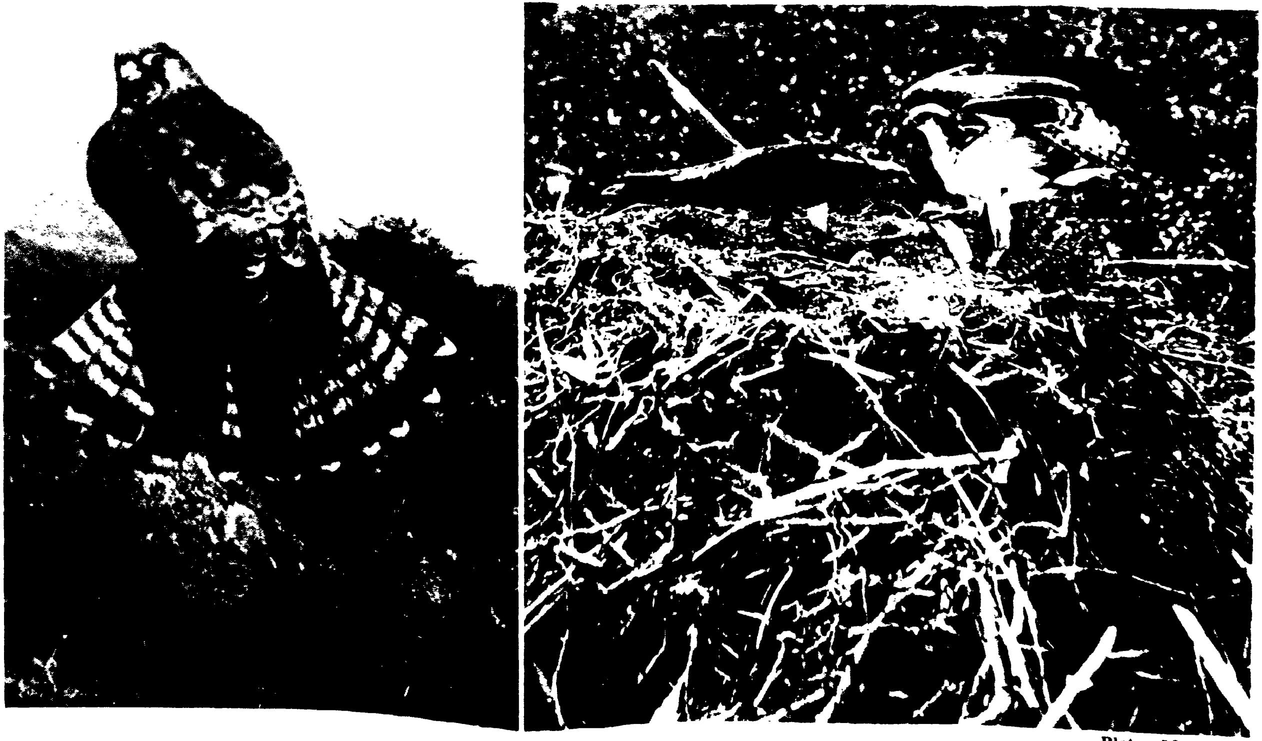
MERLIN [*Falco æsalon*]

This is the smallest of our British hawks. It is a bird of the open moor, and, like the hobby, it is practically harmless to game. Its food is small birds up to the size of the snipe, or the dunlin of the seashore; and it has a habit of selecting some boulder or jutting shoulder of rock as a station, which has given it the local country name of the stone falcon. Other names loosely given it are the blue hawk and the sparrow hawk—names vaguely applied by country-folk to the bird from the colour of the plumage of the male and the fact that it preys on smaller species. It is only the male that can properly be called a blue hawk, for its upper parts are blue-grey and so is the tail, which is broadly banded with black and edged with white at the tip. The upper parts of the female are brown flushed with grey and the tail is greyish-white barred with brown. The young birds when hatched are white, and when immature follow the natural rule of resembling the female. The nest is a mere hollow in the heather, in which are laid four or five eggs, brown spotted and freckled with chocolate—darker than those of the kestrel.

KESTREL [*Falco tinnunculus*]

A common country name for this handsome hawk is the windhover, from its habit of hovering poised in the air above the surface of the ground it hunts. No other of our hawks hangs with beating or quivering wings, swinging now and then to another airy station, as does the kestrel, watching for its prey, the small deer of the fields; and no other bird is more useful to the farmer. Its chief food is mice; and though now and then a pair of kestrels happening to nest in the neighbourhood of a rearing-field may be tempted to take a young pheasant or two, that is exceptional and the bird can be dealt with as an exception; but even so, it is only in the breeding season that a kestrel would be able to take a bird which grows to twice its size, and all through the rest of the year it does nothing but good. Farmers know this, and so do most gamekeepers—many more than when I first met a keeper.

The kestrel is vaguely known as the red hawk, as distinct from the blue, the sparrow hawk, because of its reddish-brown back; the head and tail are grey. The female is a good deal larger than the male, and is altogether darker in plumage, brown with bars of a deeper shade, and with a brown-barred tail. Both are buff-white underneath, with black markings like those on the breast of a thrush. The young are like the female, but of a lighter brown. In the breeding season the cry of the kestrel is one of the distinctive sounds of the countryside, a high, ringing call, almost with the tone of the laugh of the green woodpecker. The kestrel nests in various situations, in trees and on ledges of rock if they are sheltered from above, sometimes in holes or shelves in the walls of ruins, and I have found a nest in the hollow of a big broken branch only a few feet from the ground. The eggs vary in ground colour from yellowish-white to a dirty yellowish-red, spotted and splashed with deep red-brown, but they are sometimes



Plates 52 53

Left KESTREL SUNNING.
Right: MALE OSPREY BRINGING FISH TO FEMALE.

extremely handsome, freckled and splashed with rich brownish-red. There is an interval of from two to four days between the laying of the four to six eggs which make up the clutch.

OSPREY [*Pandion haliaëtus*]

Sometimes called the fishing eagle. I am afraid that the chances of survival of this magnificent bird are slight. Its nests in Scotland become fewer, and as it is a migrant bird and moves south in the autumn, it runs the risk of passing within the reach of gamekeepers' guns on its journey. Its prey is not game but fish, on which it swoops as they swim near the surface, plunging upon the water with a loud splash and rising with its prey in its claws. One such bird, not many years ago, was shot in this way over Vachery Pond in Surrey. A pair of ospreys were on their journey south and stopped at Vachery to rest. There they fished for trout for several days, until the keeper had orders to shoot. So one of the pair was killed, and the other went on to the south alone.

An osprey is a big and handsome bird, with a white plume, almost a crest, on its head, a white breast flecked with a gorget of dark streaks, and a dark brown back with feathers edged with grey. The female is larger, with the gorget more strongly marked. An interesting description of the nest is quoted by Gould from a letter sent to Hewitson, author of *Coloured Illustrations of British Birds*:

"I have seen several nests of the osprey upon the highest points of ruins in and about lochs in Scotland, and several more upon small isolated rocks projecting out of the water. There is something in the general appearance of the nest which reminds one of those of the wood-ants: it is usually in the form of a truncated cone; the sticks project very slightly beyond the sides, and are built up with turf and other materials; the summit is of moss, very flat and even, and the cavity occupies a comparatively small part of it. I know no other nest at all like it."

To such a nest, if the parent ospreys survive, they return every spring.

CHAPTER THIRTY-TWO

THE HERON [*Ardea cinerea*]

HERE is no enemy of game birds, but, as keepers of trout waters will tell you, of fish. I doubt whether there is much evidence as to trout. Herons feed variously on frogs, mice, rats, young birds, shell-fish, insects, almost anything that their fierce long beaks can seize—and very largely, of course, their food consists of fish, including eels. But a heron can only hunt in shallow water, and trout often swim in deep. Bream and roach, I fancy, are taken by parent herons to their young more often than trout.

Heronries are not common objects of the countryside, but they are to be found scattered up and down the counties, and the bird itself is a familiar sight, for he travels far and wide to his feeding-grounds. He is one of our biggest birds, mostly grey in colour, and with handsome plumes cresting his head. In flight a heron is very noticeable, with his long legs stretched out behind him, and the slow beats of his huge wings. To see him leave the ground is to watch what looks like almost painful labour, but in truth his flight from the moment he takes wing is rapid and powerful. I have had a heron rise from the side of a Scottish road when the car in which I was being driven was travelling at thirty miles an hour, and the heron kept well ahead of the car, a few feet from the ground, until it swung away to the left and disappeared.

As a rule herons build in colonies, as do rooks, but the nests are sometimes widely scattered. The structure of the nest is big and broad, of sticks, lined with twigs and roots, and it is a strange sight to see the great birds alight on these platforms, or on branches near them; they look as if they were practising on stilts, and as if they ought not to be nesting in trees at all. Their cries are various in pitch and tone—a harsh *crank* is the commonest. The eggs number from three to five, and are of a beautiful pale green-blue. The nestlings occupy their home for several weeks, during which their surroundings become

Plates 54—55

Top: IN THE TREETOPS: HERON RETURNING.

Bottom: WATCHING FOR SMALL FRY: HERON IN THE SHALLOWS.

more and more filthy, and if anyone should happen to be, as once I was, a spectator of persons handling young herons—as potential founders, perhaps, of other heronries—I advise him to interpose a considerable space between himself and the uncaring youngsters.

CHAPTER THIRTY-THREE

CROWS

Family.—CORVIDÆ.

Genus Garrulus—Jay (*Garrulus glandarius*).

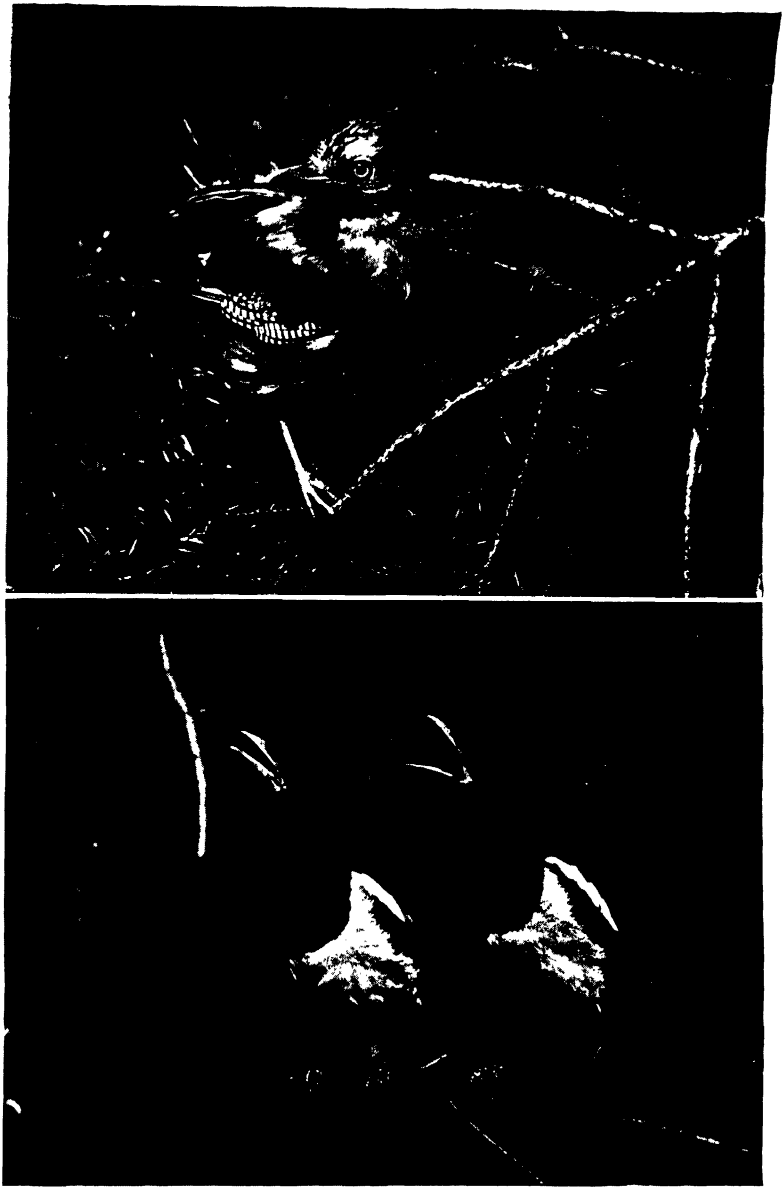
Genus Pica—Magpie (*P. rustica*).

Genus Corvus—Jackdaw (*C. monedula*); Raven (*C. corax*); Carrion Crow (*C. corone*); Hooded Crow (*C. cornix*); Rook (*C. frugilegus*).

I OMIT from this chapter one other British member of the Crow family, the chough (*Pyrrhocorax graculus*), not only because it cannot be regarded as in any way an enemy of game, but because, owing to egg collectors and other enemies, it is almost extinct. It would be pleasant to hope—but it is, I fear, beyond hope—that protection voluntarily accorded to it may some day allow it to increase in numbers.

All the other birds belonging to this family are in a lesser or larger degree enemies of game. Yet not at all times of the year, and not, I think, in individual cases. I cannot recall an instance of a jay taking an egg or chick of pheasant or partridge, during the twenty-five years that I have watched the fields and woods where I live; and only once has a magpie raided a pheasant's nest. Both birds, of course, do immense damage among smaller nesting birds, but even so there are individuals who are comparatively harmless. Not among jays, so far as my own observations go, for they tear out every nest they can find; but I have had a pair of blackbirds bring off three broods in a season, in a bush on a bank not a cricket pitch distant from a tree in which magpies nested.

Everyone knows the jay by sight, with his clear brown and fawn plumage, the crest on his head and the blue hackle in his wing; and everyone knows his harsh bark. But not everyone has heard a courting jay talk to his mate, when he makes an almost pretty address to her, something between a remark and a mew; and not everyone finds the jay's nest, for it is built often high in a tree, it may be a spruce, and if in a thorn or another tree that sheds its leaves, it waits to build until it can hide in the full foliage of summer. The nest is a shell of twigs,



Plates 56—57

Top : YOUNG JAY ALIGHTING.

Bottom : THE DUET : YOUNG MAGPIES WAITING TO BE FED.

but lined with a neat basin of small roots. The eggs are larger than the blackbird's, of the same patterned grey-green and freckled green-brown.

No more conspicuous nest is to be seen in the English wood or hedgerow than that of the magpie. Its base is a solid structure of sticks and clay; upon this is built a domed roof of interlaced sticks and twigs, with a small entrance at one side, and the cup inside is lined with roots and grass. As a rule, a pair of magpies build a new nest every season, not far from last year's, so that you get in the course of three or four years, before wind and rain have tumbled the old nests to pieces, several nests in the same neighbourhood in different stages of repair, from the nest just completed to the woody wreck of three summers gone. There are usually six eggs, larger than the jay's, and of a clear pale green spotted with darker green and grey.

The magpie is an extremely handsome bird, with its black head, neck and throat, its white shoulder and under parts, its dark blue wing with white primaries edged with black, and its splendid tail shot with green, blue, bronze and glossy black. It makes a clever and attractive pet, and one of my earliest recollections is a cottage kitchen with a friendly magpie walking in and out of the door. If it takes the eggs and young of other birds, it also consumes slugs, snails and insects, and in that way is a friend to the farmer. I doubt if there is any valuable evidence that it is a menace to the poultry yard; in Norway, at any rate, the magpie is welcomed to the house roof as a friend of the farm.

Equal in intelligence with the magpie is the jackdaw, except perhaps in its method of nest building. A magpie deliberately selects a secure position for its elaborate architecture, whereas the jackdaw casually drops sticks into holes, careless sometimes whether the cavity can be filled or not. Jackdaws, like rooks, nest in colonies, though you may find isolated nests here and there, and they choose for sites hollow trees, holes in the face of a quarry or the side of a chalk pit, or an old ruin or belfry. The nest is a mere pile of sticks, lined with sheep's wool, tufts of dry grass, and odds and ends picked up in the neighbourhood of houses. Five is the usual number of the clutch, and the eggs are pale greenish-blue blotched and speckled with deep greenish-brown and ash-grey. As they nest in colonies, like rooks, they fly often in rooks' company to feed, and it is amusing to compare the dignified flight and voice of the larger bird with the faster wing-beat and irrepressible chatter of the daw. As to their sins from the gamekeeper's point of view, jackdaws are occasional egg stealers and may take chicks from the rearing-field; they have never taken any of mine, but I believe that if a jackdaw once gets a taste for young pheasants or poultry, he becomes an addict. Fortunately his usual tastes are innocent.

If the magpie and jackdaw stand high among the crow tribe for their intelligence, there can be no doubt as to which of the family is supreme. The raven is the cleverest as well as the biggest of all the crows, and is as masterful as he is sinewy and strong. His flight is leisurely and purposeful, and his deep bark has a majesty in it that does not belong to mere cawing. It is a far rarer bird than once it was, and has disappeared from many of its old haunts inland, but it still keeps up its numbers in the wilder and more desolate ranges of English and Welsh mountains, in the Lake District, along the higher cliffs of the south and west coasts, and in such noble scenery as that of the Cheddar Gorge.

Ravens nest usually on a ledge or in a rift of cliff, but sometimes in a tree. There is a group of trees in Petworth Park known as the Raven's Clump, and in those trees ravens at one time used to nest every year. I have tried to find the date at which they last nested, but no one seems to have kept the record; Lord Leconfield, however, kindly told me the story of their disappearance, which makes odd reading. One day a farmer shot one of the pair. Within a week the survivor was joined by a new mate, arriving from no one knew where. But that effort of self-preservation was in vain. Another farmer shot them both.

And, of course, it was natural that he should. Farmers make their living, or may do so, by breeding sheep, and ravens feed on young lambs, if they can get them, and will even attack lambing ewes. They belong to the wilderness, and Sussex inland is tame. So that the enmity of the farmer, and for that matter of the gamekeeper, against the raven is a thing easily understood, and belongs not only to this, but to many generations past. The raven survives only where he escapes, or where he meets no enemy.

Plates 58—59

Top: A GREAT BIRD OF PREY: RAVEN AND RABBIT.

Bottom: CARRION CROW: A NOISY PIRATE.

Ravens will use the same nest year after year, and will add to it every spring, until it becomes an enormous structure. They are early nesters, and begin to build in February, collecting a basis of sticks, and lining the cavity with wool, roots and hair. The eggs, which may be four or five, are strangely small for so large a bird, and are almost indistinguishable in colouring from those of the carrion crow, grey-green blotched, speckled and spotted with greenish-brown, darker green and grey.

There is little to be said in favour of carrion crows, except that they are as intelligent as they are savage. They are the worst of egg stealers, and great enemies of other members of their family, the rooks; and they share the raven's propensity for killing lambs and pecking out the eyes of ailing ewes. They are bold privateers, and I have seen a carrion crow swoop at a partridge lying dead on stubble within a minute of its being shot. Every gamekeeper's hand is against them, for they will quarter a hedgerow for nests like hunting dogs; but they survive in considerable numbers, for their intelligence has taught them that they are safe from the keeper's gun in the neighbourhood of suburbs, and there they nest and breed almost undisturbed. Carrion crows, unlike jackdaws and rooks, are solitary birds, and a pair of crows will select for their nesting-place a high tree, or in mountainous country the ledge of a rock or cliff, and there build a solid structure of sticks, thickly lined in the way usual in the crow family with wool and hair. The eggs vary very considerably in marking; there are dark and light types, of which the light are the handsomest, pale green marked like the raven's with darker shades and with grey. Attention may perhaps be drawn by the birds themselves to their nest, for they have a habit of journeying to and fro uttering at intervals their snarling cry of "krar, krar."

Even more detested than the carrion crow by gamekeepers, especially in Scotland, is the hooded crow—the hoodie or Royston crow, so called because it was formerly frequent in that district of Hertfordshire. Another name is the grey crow; the bird is mainly grey in colour, with black wings, black tail, and a black hood and bib. It is even bolder and more cruel than the carrion crow, and is a persistent and determined searcher for the eggs of every species of game, woodpigeon, plover, duck and teal. During the War, when the gamekeepers were in Flanders, hooded crows increased enormously in numbers, and in some districts almost cleared the moors of grouse; it was a long time before a proper balance could be restored. The habits of hoodies are very similar to those of the carrion crow, and the nests and eggs might be indistinguishable without a sight of the parent birds. Hoodies belong mainly to the North, but they are winter migrants to the English east coast, and are fond of searching the foreshores for the varied fare left stranded by the tide.

Last of the crow family comes the rook, too well known for detailed description here. But a word as to the difference in appearance and plumage between rook and crow may be necessary. The rook is a nobler and more honest-looking bird than the crow, which has a gaunt and sinister carriage of head and shoulder. In the adult birds, too, there is a difference of plumage, for the crow has its beak feathered at the base, and the rook carries at the base a bare white patch.

And there is a difference in the habits of the two birds as regards game. The carrion crow is first and foremost a poacher and egg stealer. The rook may also steal eggs, but it does so only when it cannot get its natural food: when the ground is so hard that it cannot find grubs, or when because of excess of numbers in a particular district there is not enough natural food to go round. So that for many years past I have urged the need of a census of rookeries. The nests should be counted in spring—an easy matter before the leaves are full on the tree—and the proportion of paired rooks with their probable offspring should be set side by side with the acreage of the county and the character of the countryside, whether moorland, urban or agricultural. In this way it could be ascertained whether the rooks in any particular district were likely to lack natural food supplies, and so be likely to do harm either to crops or game; and if the latter were a possibility, then numbers could be reduced by an Order from Whitehall. Such a census has been undertaken locally, in Lanarkshire by amateurs, to whom the community should be grateful for the example they set; and in one or two of the home and midland counties, by order or sanction of the Ministry of Agriculture. But no steps resulting from this partial census have, I believe, been taken; and obviously the census deserves to be applied to the country as a whole.

Plates 60–61

Top: A MOORLAND ROBBER: HOODED CROW.

Bottom: MARCH IN THE TREETOPS: ROOK ALIGHTING.

Plates 82–83

Top: MARAUDERS OF THE MOOR: BLACKBACKED GULLS.

Bottom: LESSER BLACKBACKED GULL ON NEST.

CHAPTER THIRTY-FOUR

GULLS

GULLS are intelligent birds, and change their habits to suit new conditions. I believe that it was in December and January, 1890-91, that gulls first came in large numbers up the Thames to London. In January that year I remember that the Mersey was frozen a mile out to sea, and on the coast of Kent the pools on the seashore froze between the tides. Gulls found their ordinary sources of food denied them, and discovering doubtless that the strong current of the estuary of the Thames brought them floating morsels, foraged further and further up the river past the Pool to the bridges and the Embankment, where Londoners threw them bread. And since that year they have worked higher up the river, and not only up the Thames. They have followed the course of almost every river in the country, far inland, until the "sea-gull" in winter has become a land bird feeding on the farm.

But gulls have changed their habits in other directions. When the Wild Birds Protection Act became law in 1881, among the birds mentioned in the schedule as receiving special protection were "Gull (except Black-backed)." This Act is summarized and explained in the Badminton Shooting volume, *Moor and Marsh*, and as the Editor makes no comment on the presence of "gull" in the protected list, I infer that it did not occur to him that gulls could be regarded as enemies of game. The black-back, of course, could not be protected, because it has been recognized for years as a terror to shepherds—the greater black-backed gull, that is; it is interesting to note that the schedule of the Act of 1881 does not differentiate between this species and the lesser black-backed gull. But the idea that other gulls could be some of the worst poachers on a grouse moor was not, I think, in the minds either of writers on the subject of shooting or owners of grouse moors fifty years ago.

Yet today there are moors on which gulls are some of the enemies most dreaded by the gamekeeper, not only quartering the heather in search of nests and eggs, but preying on young grouse, ducklings and half-grown rabbits. Gulls are equally feared by the poultry keeper, the farmer and the fisherman, for they carry off chicks, devour the farmer's corn and turnips, and destroy countless immature fish in estuary waters.

The fact is that not only have the numbers of gulls vastly increased in the last fifty years, but the habits of the various species have largely changed also. Years ago the numbers of gulls, particularly in Scotland, were largely kept down by what may be called natural local processes. Gulls' eggs were a staple food of some of the crofters in spring, and young gulls were cooked for a meal. Immense numbers of gulls' eggs used to be collected and sent to London, where they did duty as plovers' eggs; I have seen many of them on the stalls of poulterers. Today these conditions have changed. The Scottish crofters fare better than did their forefathers, and the London market for "plovers' " eggs has ceased. Consequently the numbers of gulls have gone up in proportion, and the sea and the shore no longer are sufficient to supply the food they need. They turn elsewhere, inland to the farm and the moor. I have seen the foreshore of Cromarty Firth white with the regurgitated fragments of turnips grown in fields near the sea, for it is the gull's disgusting habit to eject the contents of its crop. On the moors keepers shoot and trap, but the destruction goes on. It was accentuated during the War, particularly in counties such as Argyllshire, where long arms of the sea run up between the hills, and where for four years the gulls ranged almost unchecked, and it has been difficult to restore the balance of nature since.

So that today the greater black-backed gull, the lesser black-backed, and the herring gull are a menace to grouse and salmon alike. The common gull and the black-headed gull are less of a nuisance to the gamekeeper, but they eat the farmers' corn. There is a growing realization among County Councils that gulls must be removed from schedules protecting them, but I believe that protection has only been removed from *all* gulls by the County Council of Aberdeenshire.

Plates 64–65

Top: ABOVE THE FIRTH: HERRING GULLS.

Bottom: ON THE EDGE OF THE LOCH: BLACKHEADED GULL AND NEST.

CHAPTER THIRTY-FIVE

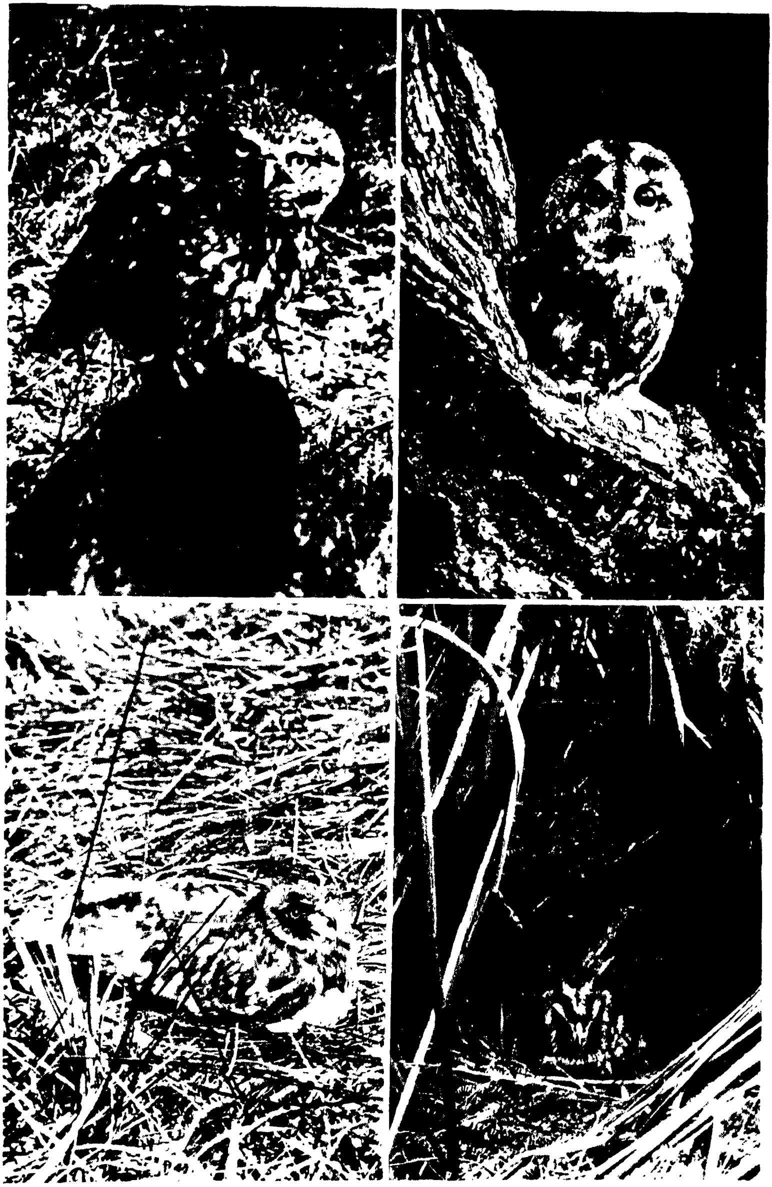
OWLS

WE have four native owls, the Barn or White owl, *Strix flammea*; the Long-eared owl, *Asio otus*; the Short-eared owl, *Asio accipitrinus*; and the Brown or Tawny owl, *Syrnium aluco*. Of these the first three are harmless to game. The Barn owl, sometimes also called the Screech owl, feeds on mice and other small deer; the Long-eared owl, sometimes called the Horned owl, from the tufts of feathers above its ears, besides mice feeds on small birds and beetles; and the Short-eared owl, also called the Woodcock owl, from the fact that it arrives at about the same time as the woodcock in November, and has a curious twisting flight, is extremely useful in destroying mice and field voles.

I should like to acquit the Brown owl of the accusation that it does damage to game, but I fear that it must be admitted to be occasionally guilty. In my own experience I have known Brown owls fly among young pheasants just gone up to roost, scaring them off their perches and then pouncing upon them on the ground, and I have also had them take young pheasants from the rearing-field on moonlight nights. But for all that I would urge that Brown owls should be strictly protected—as indeed they are protected by law—by gamekeepers and their employers, on account of the immense services they render to the farmers in the destruction of mice and young rats. After all, if they kill a few young pheasants in the early summer—which not every Brown owl does—rats are worse enemies to game than they are, and they are killing rats and mice during the rest of the year. There is another reason, doubtless sentimental, so far as I am concerned, for preserving Brown owls, and that is for the sake of their long musical hunting call, which has always seemed to me one of the most beautiful of all sounds of the night.

So much for our four native owls. There is a fifth, unfortunately, which is not a native, but which today must be recognized as permanently resident in this country, and that is the Little owl, *Athene noctua*. This owl was introduced into

Northamptonshire from Holland by the late Lord Lilford in the 'eighties and 'nineties of the last century, Lord Lilford thinking that the bird would clear the bats and sparrows from the local belfry. Lord Lilford's example in importing these birds was unhappily followed by other persons, and in the 'nineties a number of pairs were known to be nesting in different parts of the country. Today the Little owl has spread throughout the midlands and southern counties, and has proved a plague. It takes young pheasants and partridges, and chicks from the poultry yard, and although its diet is varied, and consists partly of beetles and worms, it adds to these the bodies of singing birds, which it takes to its nest to form a sort of larder. The Little owl is specifically denied protection in many counties, and inferentially excluded from protection in others, since our native owls are named in the local schedule of protected birds, and the Little owl is not; but unfortunately in some of the county schedules "owls (all species)" are protected, and this has been interpreted in a Court of Law as providing protection for the Little owl. In strict law that interpretation may perhaps be right, but it follows the letter rather than the spirit of the Wild Birds Protection Acts. For when the main law protecting certain birds was framed in 1880, the Little owl was not a resident, and so could not have been considered by those who drafted the original Bill. This fact was doubtless taken into consideration by the Bench of magistrates in a recent prosecution. In the summer of 1934 a gamekeeper in Hertfordshire was summoned, at the instance of a local witness, for shooting a Little owl in the act of carrying off one of his employer's pheasants. The Bench, after taking all the facts into consideration, fined him the nominal sum of a shilling. The County Council schedule of Hertfordshire protects "owls (all species)." In other counties the gamekeeper could not have been prosecuted.



Plates 66 - 69

HUNTERS BY DAY AND DUSK.

LITTLE OWL. BROWN OWL.

SHORT-EARED OWL. LONG-EARED OWL.

CHAPTER THIRTY-SIX

THE SALMON [*Salmo salar*]

SALMON spend part of their lives in the sea and part in fresh water: should they be regarded as fresh water fish or marine? Their origin is probably marine, for the reason that, as Tate Regan sums it up, "the Salmon is not a European but an Atlantic species, the Trout extends eastwards to the Caspian and Aral seas and their tributaries, but is absent from the Siberian rivers to the north of them, wherein our Roach, Pike and Perch are found; with one or two exceptions, probably due to recent geographical changes, the Char and Whitefish of the Alps are found only in those lakes which do not communicate with the Mediterranean. In short, the distribution of the Salmonoids has been mainly determined by the seas to which they resort, or those from which they formerly came."

It is not always easy for a beginner to distinguish a salmon from a trout, but it is useful to remember two or three points. Counting the scales from the base of the adipose fin downwards and forwards to the lateral line, there are 10 to 13 scales on the salmon and 13 to 16 on the trout. In the salmon the tail at the base of the caudal fin is more narrowly constricted in the salmon than in the trout, so that it is possible to grasp a salmon at the base of the caudal fin, and to "tail him out" of the water—a useful proceeding in the absence of a gaff or net—whereas in a similar grasp a trout would slip through the fingers. Thirdly, in the salmon the caudal fin is slightly forked.

Salmon spend varying lengths of time in the sea, but run up rivers in order to spawn, a process which generally takes place from September to February. As a rule there is a run of fish in rivers from January to May, and these are known as spring fish, but the times of running up are irregular, and you may catch a spring fish as early as the end of November. There is a second or autumn run, varying as regards numbers in different rivers, and these are known as autumn fish. But salmon will in point of fact run up a river at almost any time of year.

In any case, the journey of the salmon up the river is for the same purpose, whether the time taken over it is short or long. A flood or rise in the stream generally causes fish to move up from lower pools to higher, the journey ending when the salmon reach the spawning beds. On this journey the salmon does not feed, or cannot be said to do so regularly, but that it takes food or substance similar to food into its mouth is obvious from the fact that salmon are caught with fly, bait and prawn, and that if—which is a form of angling for salmon not to be praised—a hook is baited with a bunch of worms the salmon will swallow hook and worms down into its stomach; though when the stomach is opened only the hook will be found there. I believe that there is no instance of a salmon caught in fresh water except with an empty stomach.

When salmon first run into the lower pools of a river they are in the best possible condition, their silvery coat gleaming with pink and blue, and with fat stored in their tissues. A fresh-run fish will often be found with sea-lice about its gills—small crustaceans with sucking-discs and claws, which feed on the blood of their host. Sea-lice, however, cannot live in fresh water, and gradually drop off, so that their presence is evidence that the salmon is only a day or two up from sea water. As the salmon travel further and further up the river, particularly if drought or low water causes them to linger for long in the upper pools, they lose their silvery brightness, the flesh becomes flabby, the colour changes to red, with large black spots edged with white, and the skin on the back becomes spongy and thick. In the males the lower jaw lengthens to an ugly hook, and because of their colour the males are known as "red fish" and the darker females as "black fish." At this stage they are hardly worth eating.

Arrived at the spawning grounds, the female chooses as a rule a shallow run of water above gravel, usually next to a deeper running pool. She lies above the gravel, and by sideways movements of her tail scoops a cavity, into which she deposits some of her spawn. The male follows her, and sheds his milt on the spawn, and she in turn sweeps back the gravel over the fertilized spawn. The two then repeat the process, gradually working up stream, so that when the whole of the spawn is shed and fertilized the bed or "redd" in which it has been buried may be several feet long. All this is

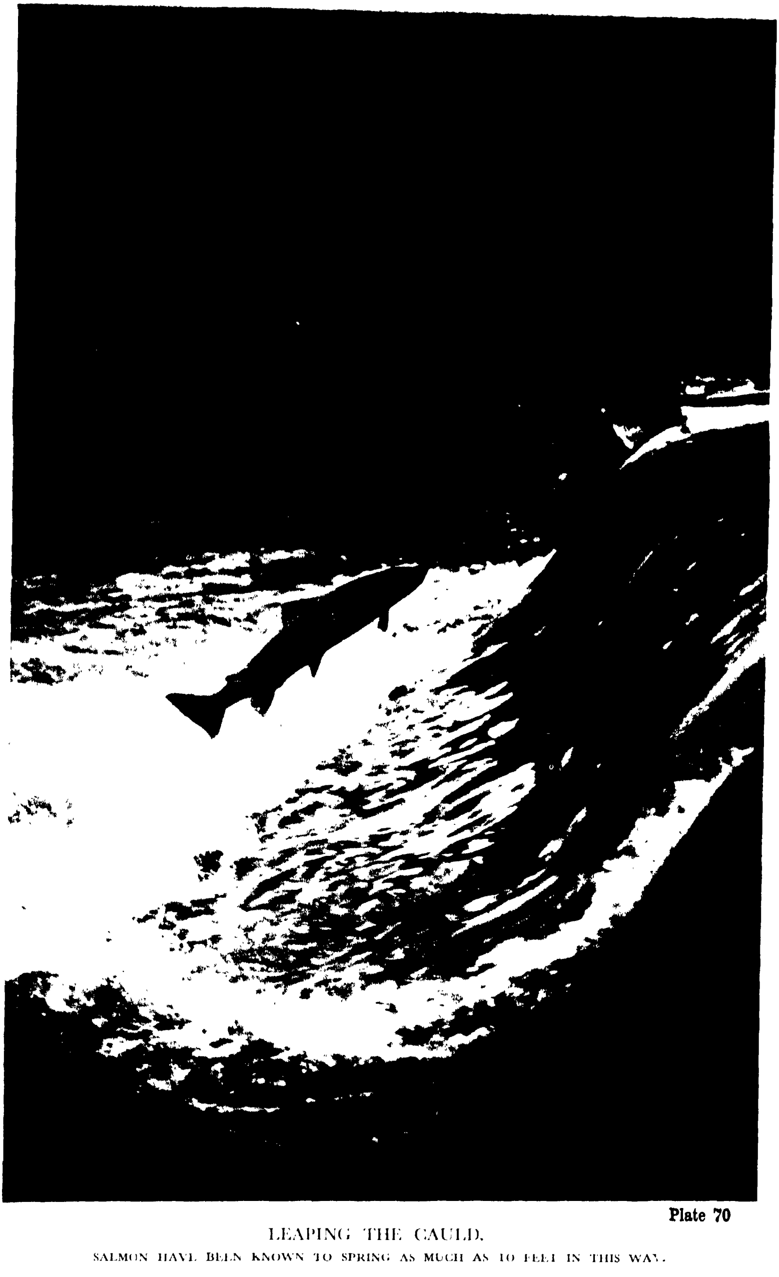


Plate 70

LEAPING THE CAULD.

SALMON HAVE BEEN KNOWN TO SPRING AS MUCH AS 10 FEET IN THIS WAY.

very exhausting to the parents, who when they have finished spawning are thin and weak, in shape more like eels than salmon. Some of them die, and you may see their dead bodies being washed down by the river or lodged among rocks along its rim. Others pick up again, generally very slowly, but sometimes fast, and it happens occasionally to experienced fishermen and ghillies that a spent fish is gaffed and hauled up the bank, only to be recognized after a few minutes as a "well-mended kelt," which by its brightness and fullness deceived the eye. A fresh-run fish remains bright and silvery after gaffing: a kelt, however well mended, changes colour to black almost as soon as it is out of the water.

The "kelts," or "slats" as they are sometimes called—"kelt" is the term I have always heard in Scotland, and "slat" in Ireland and the south of England—in any case go back to the sea. Perhaps a flood washes them down; perhaps they find their way down; at all events, down to the sea they go. In the sea they start feeding again, and recover their condition, to return once more to the spawning beds after intervals varying from six months to two years. We can tell whether and how often a salmon has spawned, as also we can tell its age, by examination of its scales. As a salmon grows older, its scales do not increase in number, but in size, and their growth takes the form of concentric rings extending from a central core. When the fish is feeding well, as it does in the summer in the sea, the width of the newly added rings is greater than that of rings added when the fish is feeding less hungrily or less fully, as it does in the winter; so that a succession of winter rings shows itself as a darker circular band, and a succession of summer rings as a lighter band. Similarly the process of spawning affects the health and the growth of the fish, which is shown by a dark, irregular band, the edges of the scales being frayed and worn owing to the shrinkage of the salmon after the act. An illustration of scales magnified and photographed shows how the fish itself can tell you its life-history.

We may return to the "redd." When the ova hatch, which may be after a period of a hundred days, more or less depending on the temperature of the water, the immature fish resulting are curiously shaped little creatures known as alevins. They are weighted with a yolk sac, from which they absorb nourishment for a period of perhaps fifty days, during which time they lurk among the stones of the spawning bed. They then join together, shoals of little fish known as fry, which grow till they deserve the name of parr, when they begin to shift down the river. The next stage is that of the smolt, when the parr takes on a silvery coat, and makes for estuary water. His journey down river, it may be noted, from the alevin stage onwards, has taken him about two years. (Mr. C. Tate Regan, in *British Freshwater Fishes*, tells us—and why should we doubt? —that the word "smolt" is derived from an old English word meaning "shining," but the Oxford English Dictionary unkindly comments "origin unkn.") And then comes one of the many puzzles in the life-history of the salmon. All smolts enter the sea, and begin sea life by feeding, and all of them enlarge their size by feeding until they become grilse, which are slender and graceful fish, but not yet mature salmon. And then a certain number of these grilse, obeying a precocious urge which does not seem to affect their fellows, decide to ascend their native river again for the purpose of spawning. They spawn as grilse, and return again to the sea; while their fellows remain in the sea, feeding as salmon should, and do not return to fresh water and the redds until they have been two or three or even four years in the sea, and enter the lower pools of the river as maiden fish of weights varying up to 40 pounds or more.

A second puzzle is the story of the salmon at sea. A Norwegian naturalist, Knut Dahl, has proved by experiments in netting that grilse engage in a sea life of chasing shoals of mackerel and herring. But the courses of the larger fish remain obscure. Big salmon are not netted in the open sea, and though it seems probable that they feed as do grilse, on the shoals of smaller fish, the seas in which they hunt are not known.

In the sea salmon are attacked by a species of louse, *Lepeophtheirus salmonis*, which attach themselves as a rule to the dark scales at the top of the tail. When a salmon is caught in fresh water with sea-lice on him, he is presumed to be straight from the sea, and it was at one time believed, in the casual way in which such periods are guessed, that a salmon carrying sea-lice had not been in fresh water for more than twenty-four hours. But practical experiment has shown that sea-lice can survive the change from salt water for four or even five days; and though such a period is probably exceptional, twenty-four hours as the length of life for sea-lice in river water is probably an under estimate.

In fresh water another species of louse infests salmon. These, called by fishermen "maggots" (*Lernœopoda salmonea*), belong to the same order, though they are different in appearance from sea-lice. They can live in salt water, and may be found in the gills of fresh-run salmon re-ascending a river. Apart from lice, salmon are subject in fresh water to a disease due to a specific germ named by Hume Patterson *Bacillus salmonis pestis*. A fish affected by disease in this way is a miserable spectacle. The parts of the skin invaded by the bacillus mortify and become covered with a white fungus, *Saprolegnia ferox*. The wretched fish may be seen moping in quiet water near the bank, and, if possible, should be netted out and destroyed. The disease is believed to start with an injury to the skin, which gives entrance to the bacillus.

Salmon run up rivers at varying speeds and with varying lengths of journey. In low water they remain for long in the same pool, and it needs rain or indeed a flood to move them. They are helped to ascend certain rivers by salmon ladders, which may entail leaping falls, it is even said to a height of ten feet. I have never seen a salmon leap anything near such a height as that; but I have watched them ascending heavy runs of water with a zest and strength that is amazing. Over the cauld at Melrose, on the Tweed, for example, when there is a lot of water coming down, it is an almost incredible sight to see big fish forcing their way up, with a sinuous movement of the whole body which ridges the slope of the fall. Over and over again a big fish is tumbled back into the foam below, and over and over again it propels itself up through the streaming current.

As regards weight, there is a legendary fish of 69¾ pounds, killed by the Earl of Home on the Tweed about 1730. As with others of such antiquity, the authenticity of the record is doubtful. Next in weight comes a salmon of 67 pounds, killed by Jock Wallace, a poacher, on the Nith at Barjarg in 1812. The heaviest of which there is certain knowledge in recent years is a fish of 64 pounds, killed on the Glendelvine water of the Tay by Miss G. W. Ballantine, daughter of Mr. James

Ballantine, on October 7th, 1922. Miss Ballantine hooked the fish in the Boat Pool at 6.15 p.m. and landed it half a mile below at 8.5 p.m. The fish took a spinning bait, a dace, and measured in length 54 inches, girth 28½ inches. As it happens, another record of a heavy salmon belongs also to a lady. On March 12th, 1923, Miss Doreen Davey, fishing the Wye at Lower Winforton, killed a salmon of 59½ pounds. This is not only the record fish for the Wye, but is the heaviest spring fish caught on a rod in Great Britain.

But the best story of a heavy salmon hooked in this country is of a salmon which was lost. Bishop Browne, late of Bristol, told the story in a book published in 1895, *Off the Mill.* He hooked it at noon near estuary water on the Tay, and played it, on a minnow, and the fish broke the tail hook of the minnow at half-past ten at night. This was near Newburgh, and at Newburgh there was taken in the nets the next year a salmon with a mark where the tail hook had held it which weighed 74 pounds.

CHAPTER THIRTY-SEVEN

THE TROUT

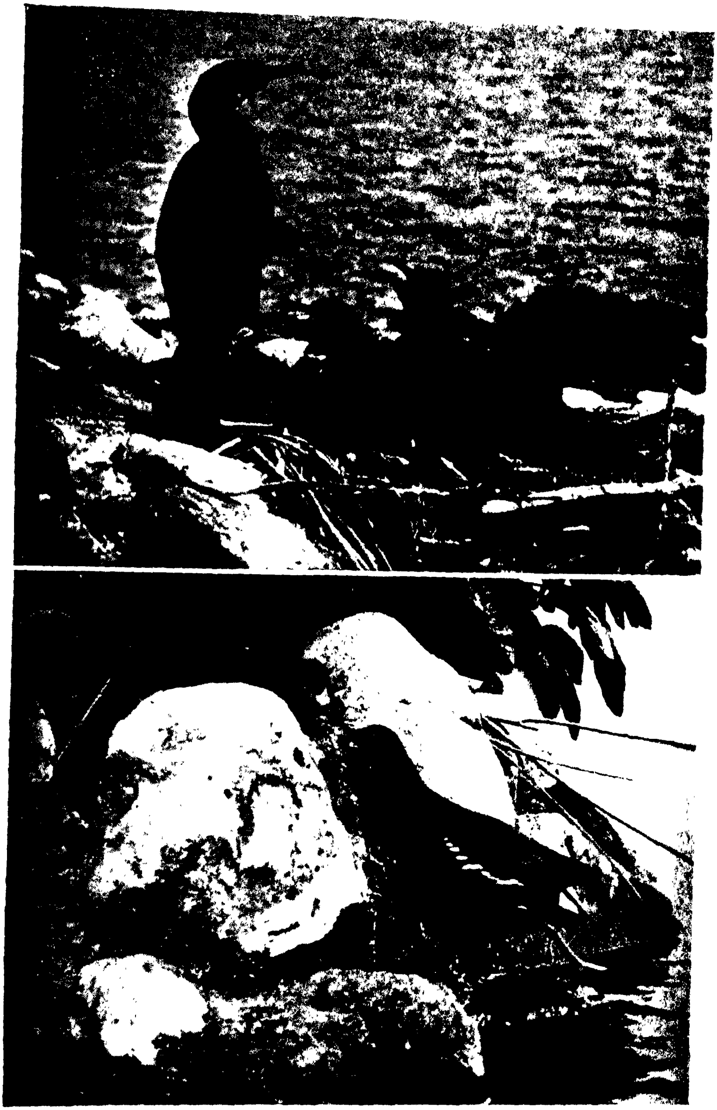
TOT *homines, tot sententiæ* runs the old Latin proverb, and it might be said that there are as many theories or opinions as to the species of trout as there are names of the trout themselves. There are ichthyologists who would separate as many as ten species—sea trout, sewin, river trout, eastern sea trout, Galway sea trout, Orkney sea trout, the great lake trout, the gillaroo of Ireland, the black-finned trout of some of the Welsh tarns, and the Loch Leven trout. Mr. Tate Regan, than whom no higher authority exists, regards all these "as pertaining to one variable species, which differs from the salmon, especially in the less graceful form, the deeper caudal peduncle, the stronger maxillary, and the less emarginate caudal fin; whilst the dorsal fin-rays are often fewer, the rows of scales on the tail are usually more numerous, and there are other distinctive characters." This is a simple summary of a wide collocation of observed fact.

The main fact to be remembered is that these fish, sea trout, river trout, gillaroo and the rest, although differing in habits and appearance, do not differ in structure. Trout, in short, are capable of adapting themselves to their environment to an extent which perhaps seemed incredible to some of the ichthyologists of the past, but which is accepted today as the result of examination and collocation of numberless pieces of evidence. For instance, it has been proved that sea trout, if they are prevented from travelling to the sea, will content themselves with a life in fresh water; and it was only when trout from an English stream were exported to New Zealand that it was discovered that they went down to the sea and found their way back to the river—became, in fact, sea trout. In the same way, there are no true fresh-water fish, such as roach and perch, in the Hebrides, or the Orkneys, or the Shetlands; but there are plenty of brown trout, which is only to be explained by supposing that they are the descendants of so-called sea trout, which have lost their sea-going habits.

Sea trout differ from salmon in several respects, as regards their life in the sea and in fresh water. They do not travel or hunt far out to sea, as do salmon, but remain nearer inshore: I remember one moonlit evening in the estuary water of a Norwegian fiord when the little boat in which I was being rowed leapt on the grey and white wave-ripples and the sea trout came ravenously at the fly. In the sea they feed as do salmon, on sand eels, sprats and other fry. But, unlike salmon, they feed also in fresh water, on minnows, shrimps, and other light fare; and there is no more delicate or sporting form of fishing than to try for them with a dry fly, as you may have the luck to do in a Norwegian river where there is a big run of fish, and you may take them of any weight up to 20 pounds or more. It takes some time to get into the knack of seeing your cocked fly come dancing downstream to you, but when you have once learned the look of it among the sunlit ripples and have felt the rush of a heavy fish on fine gut, you will prefer that way of approaching trout to any form of angling for salmon.

Sea trout run up rivers to spawn, but not quite at the same times as salmon. In a salmon river you may hook a spring fish before the season closes in November; but sea trout do not begin to run up until May or June—possibly as early as April—and these young fish are smaller than those which run up in the autumn months. Their spawning habits are much the same as those of the salmon; the ova hatch in the gravel redds and the young fry in due time lose the yolk-sac, and at the beginning of their third year in the river start dropping downstream. They spend some time feeding in estuary waters, but eventually get out to sea, and just as salmon spend varying lengths of time in sea water, before returning to their rivers to spawn, so sea trout may run up when they have been only a few months in the sea, as do grilse, while they may remain in the sea through three summers, and attain a weight of over 40 pounds. Actually the largest sea trout on record is a fish of 44 pounds, 49 inches in length, which was taken from Birgham Dub on the Tweed by the Hon. Charles Ellis in November, 1868.

There are many local names for the sea trout. One of the names for the smolt is "orange-fin," and another descriptive name for a young fish running up for the first time after only a few months in the sea is "black-tail," from the dark colour



Plates 71 72

ENEMIES OF FISH.

Top: ROCKS ABOVE THE CHANNEL: CORMORANT AND YOUNG.

Bottom: ON THE RIM OF THE POOL: WATERHEN FEEDING CHICK.

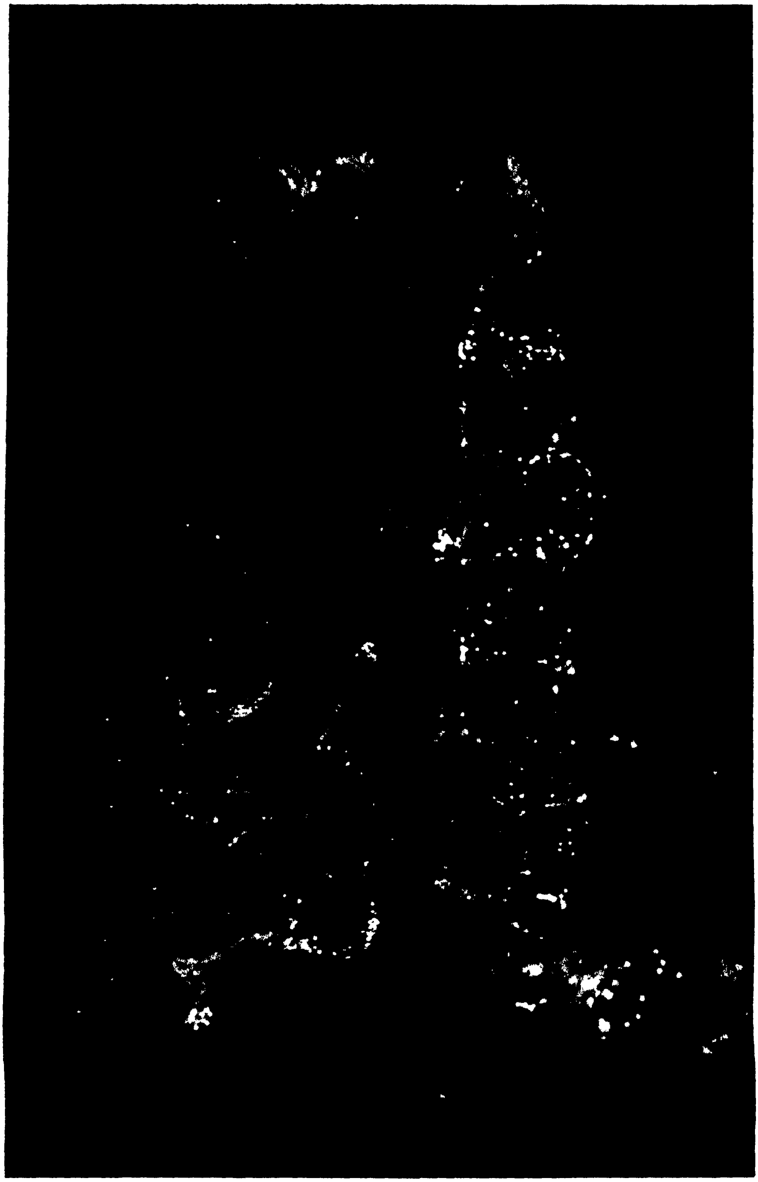


Plate 73

PERCH SPAWN.

PERCH SPAWN DEPOSITED IN NECKLACE FASHION ON FLAG-ROOT. A DELICACY TO FISH AND WATER-FOWL.

of the caudal fin. These young fish are known in Devonshire as "peal." A year later, when they are a different shade of silver, they become "white-fish," or in the north "whitlings," and in Scotland "herlings" and "finnocks" (Gaelic *fionnags*, from *fionn*, white). Other vague names are sea trout and salmon-trout; and local variants are "truff" in Devonshire, "scurf" on the Tees, and "sewin" in Wales. Last comes the name "bull-trout," which seems to be applied to sea trout of large size, partly because of their weight and partly because they are sluggish and bad takers.

We come now to the non-migratory trout of river, stream and loch; to the little yellow fingerlings that leap in the foam of peaty burns; to the trout of chalk streams such as Test and Itchen; to the brown trout of Scottish salmon rivers and Devonshire moorlands, the trout of Loch Leven, the golden trout of certain waters in the north of Scotland, and the gillaroo that feeds on shell-fish in the loughs of Galway. From white to almost black, from silver to golden, with backs of blue, olive, green, brown and violet and sides of grey, yellow and gleaming gold; spotted closely or sparsely with black, red, brown, crimson; all of them the same species of trout, differing in colour because of different environment, and changing in colour with change from light to shade, or from one water to another. All with the same habits of spawning and feeding: all of them just trout—even the gillaroo, for though he feeds on shell-fish and has a thick-walled stomach to suit his food, you may catch him on a fly or with bait. His name, by the way, has nothing to do with his food; he carries red spots, and he gets his name from the old Irish *giolla*, "fellow," and *ruadh*, "red."

Into British waters there has been introduced of recent years the rainbow trout, *Salmo irideus*, of California. This is a handsome fish, which derives its name from the gleaming blue, pink and silver of its sides. The introduction has been successful in some waters and less successful in others, for the rainbow is a migrant, and if he can find his way down to the sea, he will desert inland water.

Apart from the sea trout already mentioned, the record trout caught in British waters was taken in Loch Awe by Mr. W. Muir in 1866. It weighed 39½ pounds, was foul-hooked on a trout fly and took two and a half hours to land.

It was set up in a glass case, but the case was lost in a fire. Next to this fish comes a trout of 30½ pounds, caught on a spoon in Lough Derg in 1861. The biggest trout taken in a river is a fish of 27½ pounds caught by Col. Dobiggin at Murthly on the Tay in 1842; and the best trout taken from the Test is one of 18 pounds, caught by Brig.-Gen. T. Hickman at Broadlands on June 9th, 1922.

CHAPTER THIRTY-EIGHT

CHAR

OF trout in the British Isles only one species today is recognized. Of char, Tate Regan, the leading—I had almost said the only—authority, recognizes no fewer than fifteen. The first point to notice as regards the natural history of char is that it is a fish belonging to Alpine and Arctic ranges. Char are found in deep cold lakes, though under exceptional conditions they flourish in shallow waters, but depth and coldness seem to be their chief needs. Tate Regan gives as examples of deep lakes in which char are to be found Loch Morar, with a depth of more than 1,000 feet; Loch Ericht, 512 feet; Loch Rannoch, 440 feet; and of shallow lakes, Loch Borallan, which has a maximum depth of only 21 feet. Of lakes situated at a high altitude, the same writer mentions Loch Builg, 1,585 feet above sea level; Loch Ericht, 1,153 feet, and Loch Dungeon, 1,002 feet; while of lakes whose altitude may be contrasted with these he instances Lough Corrib in Ireland, Loch Fada in North Uist, and Loch Scourie in Sutherland, all of which lie at less than 40 feet above the level of the sea.

Char in northern latitudes are migratory fish, going down from river to sea in spring, and returning in autumn to spawn as do our salmon. Doubtless the char of our lakes and loughs also were at one time migratory in the same way, and at some period since the glacial epoch became isolated in the inland waters in which they are now to be found, and have remained as lacustrine colonies ever since. They stand therefore in relation to their migratory ancestors, and to the migrants of Arctic rivers, much in the same way as our inland trout today may still interbreed with their sea-going relations, and there remains therefore but one species of trout in these islands, whereas char for many thousands of years have been isolated in their inland waters, and so have evolved different species.

In colour char vary as do trout. As with trout, the back may be bluish-grey or greenish or olive or brown, shading into white or orange or crimson on the sides, with orange or red spots, which sometimes extend to the dorsal or caudal fins; these are usually grey, but the caudal fin often, and the lower fins sometimes, are tinged with red. Indeed, red is the dominant colour of the fish, and if we remember that *ceara* is Celtic for red, and *cear* for blood, we may guess at the origin of the name char.

Char vary in their times and habits of spawning. Like salmon, they choose beds of gravel for their redds, but in some lakes spawn in deep water and in others in shallow. In Loch Killin and Loch Grannoch they come on the shallows for a few days, at exactly the same time year after year, and after a few days are all back again in the deep water, whereas in Windermere their breeding time extends from November into February. It may be that they are disappearing from lakes in which they were once plentiful, for they were once found in Loch Neagh, and are there no longer, while they have vanished from Hellyal Lake in the Orkneys, and are less abundant than they were in Lough Gortyglass—possibly in these two latter cases owing to the introduction of trout.

I append here, with grateful acknowledgment to a master investigator, an abbreviated list of the fifteen species of char recognized by Tate Regan. For a full description, reference should be made to the chapter devoted to char in the author's *British Freshwater Fishes*:

1. Willughby's char, or the Windermere char (*Salvelinus Willughbii*), is found in Lake Windermere and several other lakes in the Lake District, namely, Coniston Water, Goat's Water, Wast Water, Ennerdale Water, Buttermere, Crummock Water, and Lowes Water. All these are deep lakes, Wast Water, 238 feet, being the deepest. Willughby's char is usually 10 to 12 inches in length, but may grow to 18 inches. These char can be caught on a fly or on a minnow spun behind the boat, and the making of potted char is a local industry. There are several lakes in Scotland in which char of this species are to be found, namely Lochs Grannoch and Dungeon in Kircudbrightshire and Loch Doon in Ayrshire; and in the Highlands, Loch Builg in Banffshire, Bruiach in Inverness-shire, Morie in Ross-shire, Borollan, Loyal and Baden in Sutherland, and Calder in Caithness. The char of Loch Fada in North Uist is very closely allied to this species.

2. Lonsdale's or the Haweswater char (*Salvelinus Lonsdalii*)

is a much smaller fish, not more than 7 inches in length, and weighing 3 ounces.

3. The Torgoch (*Salvelinus perisii*). This is to be found in three mountain lakes near Llanberis in Carnarvonshire, and in Lake Corsygedol in Merionethshire. "Torgoch" is Welsh for Red Belly. It is a small fish running up to 10 inches in length and 6 ounces in weight. At Llanberis the lower lake, Lyn Padarn, is deep with a rocky bottom, and in November the char leave Lyn Padarn to pass up a connecting stream to the shallows of the upper lake, Lyn Peris, where they spawn.

4. The Struan char (*Salvelinus struanensis*) belongs to Loch Rannoch in Perthshire. An average adult measures 8½ inches in length and 3 ounces in weight. The species was first described in 1881 by Sir John Gibson-Maitland, who netted a score about to spawn in September, and found them of wonderful colours—black shot with metallic blue above the lateral line, and below, claret shaded with steel blue; with salmon spots, twenty above the lateral line and sixty on or below. Rannoch is very deep, 350 feet to more than 500 feet, and the Struan char has the characteristically large eye of a bottom-feeder.

5. The Haddy (*Salvelinus killinensis*) grows to a length of 16 inches, and the colouring is dull, olive-grey shading into yellowish-white. Killin's greatest depth is 67 feet, and the haddy is never seen except for about ten days in September, when the fish come on the shallows to spawn. A single char almost precisely similar to the haddy was captured in Loch Roy in Inverness-shire in 1862.

6. The Large-mouthed char (*Salvelinus maxillaris*) gets its name from its exceptionally long maxillary. It is found in a small loch under Ben Hope in Sutherland, 8 to 11 inches in length, back and sides and dorsal fin plumbeous, and belly brilliant orange.

7. Malloch's char (*Salvelinus mallochi*) occurs in Loch Scourie in Sutherland, 8 to 12 inches long, short and blunt in the head, with back and sides slate-coloured, with pale spots, and belly white tinged with orange.

8. The Orkney char (*Salvelinus inframundus*) used to inhabit Loch Hellyal in Hoy, and two specimens, somewhat resembling the Rannoch char, are in the British Museum. It is believed to be extinct.

9. The Shetland char (*Salvelinus gracillimus*) is a small, elongated fish, 8 inches in length, grey with silvery or orange belly, and with orange spots on the side. Found only in Loch Girlsta.

10. Cole's char (*Salvelinus colii*) is almost identical with the Windermere char, but is constant in its character in widely separated localities in Ireland—Lough Eask in Donegal, Lough Derg, several lakes in Connaught, Lough Gortyglass in Clare, and Lough Currane in Kerry. The Lough Eask char are bluish black above, silvery or orange below, with orange spots, but the Connemara char are said to be greenish with white spots.

11. Gray's char (*Salvelinus grayi*) is so-called "fresh-water herring" of Lough Melvin in Fermanagh. In most species of char the males are brighter in colour than the females, and have larger heads, but in the Lough Melvin char it is impossible to distinguish the sexes from external characters. They are leaden in colour above and pale below, though a few of them have light spots and rich salmon bellies.

12. Trevelyan's char (*Salvelinus trevelyani*) is nearest in character to the Haweswater char, and comes from Lough Finn in Donegal.

13. Scharff's char (*Salvelinus scharffi*) comes from Lough Owel in West Meath, and is said to run to 1½ to 2 pounds, occasionally to 3 pounds. It is silvery with blue-grey back.

14. The Blunt-snouted Irish char (*Salvelinus obtusus*) is found in Loughs Luggala and Dan in Wicklow, and in Killarney and Acoose in Kerry. It grows to a length of 8 inches.

15. The Coomasaharn char (*Salvelinus fimbriatus*) gets its specific name from its long and numerous gill-rakers. Only a single female specimen is known, 6 inches long, from Lough Coomasaharn in Kerry.

CHAPTER THIRTY-NINE

GRAYLING [*Thymallus vulgaris*]

GRAYLING, so called from their colour, are fish which are to be found in many English and Welsh trout streams. They are beautifully coloured, varying from green-grey to purple-grey on the back, silver on the sides, and white below; the dorsal fin is barred with rows of bluish black spots, and may be pale purple in ground colour. Grayling are sporting fish, and their special value is that they come on as takers of fly when the trout season is over. They like fast running water, with beds of gravel and sand. Spawning takes place from March to May, and it is for this reason—that they are out of season while trout are in, and so must be returned to the water—that in spring and early summer they are unpopular with trout fishers. A peculiar property of grayling is a pleasant scent, something like that of thyme.

The record grayling was caught in the River Wyly at Bemerton, Wiltshire, on October 24th, 1883, and weighed 4 pounds 9 ounces. On Boxing Day, 1905, Mr. H. J. Mordaunt and Mr. Maurice Headlam took three fish just over 4 pounds each, at Mottisfont on the Test.

CHAPTER FORTY

PIKE [*Esox lucius*]

PIKE and perch cannot be termed game fish in the strict sense in which the description is applied to salmon and trout; technically speaking, they are "coarse fish." But as fierce fish of prey, as both foragers and hard fighters, they are game in every other sense of the word, and deserve their place as sporting quarry in the world of angling.

Pike belong to rivers, lakes and ponds. They are solitary in their habits, and select lodges from which they issue in search of food. They are irregular in their moods as regards feeding and sometimes remain motionless in their chosen homes, while small fish swim close to them, until appetite drives them out to the chase. When a pike is not hungry nothing will tempt him; when he is on the feed he seizes anything from minnow to duck. There are many stories of the ferocity and voracity of pike. Walton quotes Gesner, who writes of a drinking mule seized by the lips, and a girl washing clothes in Poland bitten in the foot. Pennell has an account of a boy of fifteen bathing near Ascot, who was seized by both hands, and there are many instances of pike dying from being choked by their victims. A swan feeding has been drowned and the pike choked by the bird's head, and in one season a few years ago two pike were found floating dead on the lake at Sherborne in Dorset; one weighed 35 pounds and had been killed by trying to swallow a carp of nearly 12 pounds, and the other, a fish of 29 pounds, had been choked by a pike of nearly 10. On Loch Tay, in 1870, two pike were seen struggling on the surface, the head of one in the mouth of the other: they were gaffed by a boatman and found to be nearly equal in size and to weigh together 19 pounds. A cast was made of these two fish, which is to be seen in the Buckland museum.

Pike begin to pair in late autumn, and the male chooses a mate of the same size as himself, or bigger. In March or April, or even sometimes in February, they leave deep water and run up ditches or backwaters, or perhaps choose a shallow, where they spawn. A big female carries large numbers of ova; Buckland estimated that a fish of 32 pounds contained over half a million. The fry hatch out within a period of ten days to three weeks, according to the temperature of the water, and having got rid of the yolk-sac, they feed on such small creatures as water shrimps, but soon begin attacking other fry. Their growth is rapid. Tate Regan estimates that pike caught in early autumn weighing ¾ pound, 1½ pounds, and 2¼ to 3 pounds are each rather more than one, two, and three years old. For some years afterwards the growth may be 2 pounds a year, and in a good season 4 to 5 pounds; but there must come a time when the fish cannot make good the loss of condition caused by spawning, and then the weight begins to go back. Pike that are caught or found dead with big heads and thin bodies are doubtless fish that have deteriorated in this way.

A pike may be a handsome or an ugly fish, according to its shape and its colour, which is olive green on the back and white underneath, the sides shading from dark to pale, and barred and spotted with yellow. A heavy young female with a tapering head is a good-looking fish, but when the head is broad at the snout there is little favour in a set-up specimen, however far down it may have pulled the index on the steelyard. As to weights of great pike, no list of heavy fish would be complete which did not begin with the story of the Kenmure pike, caught towards the end of the eighteenth century in Loch Ken by John Murray, gamekeeper to Viscount Kenmure. According to the Rev. W. B. Daniel, in *Rural Sports*, this fish weighed 72 pounds, and was caught with a fly made of peacock's feathers. Part of the skull has been preserved at Kenmure Castle, and no less an authority than Tate Regan, having measured it, considers that the traditional weight, 72 pounds, is not impossible.

To come to later times, the record pike taken by fair angling was caught in Lough Conn in July, 1920, by Mr. John Garvin, and weighed 53 pounds. Mr. R. B. Marston, Editor of the *Fishing Gazette*, after due inquiry awarded its captor the £10 which he had offered for many years for an authentic pike weighing 50 pounds. The next largest pike was reported also from Lough Conn, in 1917, the captor being Mr. Bernard Brown; but Mr. Brown in the *Fishing Gazette* of May 9th, 1925, altered these details to the year 1916 and to a weight of 49 pounds.

CHAPTER FORTY-ONE

THE PERCH [*Perca fluviatilis*]

THERE is no handsomer fresh-water fish than the bronze-flanked, dark-barred perch, with his olive back shading to golden yellow, his spiny dorsal fin and the scarlet pelvic and anal fins set under his white belly. Nor is there a more sporting fish, a bold biter and fighter who takes down the float with a rush and keeps it down with his last ounce of strength. None of us, I think, forgets his first half-pound perch: how well I remember mine, under the shadow of a tree in Brocket Park in Hertfordshire! I saw those grey-green ripples under the tree again only a year or two ago, and could fancy my blue and white float again dragged under the surface of that noble water, unchanged since all those years ago. Since then many half-pounders have been taken in other waters, but that first fighting fish remains in its own niche of memory.

Perch in winter go to deep water. In April and May they get to the shallows to spawn, and the eggs are laid in long strings, generally wrapped about water weeds. The young fish grow rapidly, and the perch is mature in its third year.

Authorities differ as to record weights. According to Dr. Travis Jenkins, author of *The Fishes of the British Isles*, published in 1925, "the record perch caught by fair angling in the British Isles weighed 5 pounds 4 ounces, and was caught at Sandford Mill, Woodley, Berks, in 1873 by Mr. W. M. Leach. Two others of 5 pounds each were caught in Daventry Reservoir in 1882 and 1908; and another of the same weight near Upway, Dorset, in 1870."

The record of the *Field*, "Where to Fish," is as follows:

"5 pounds 2 ounces. Caught on the Waveney near Geldeston by Mr. L. Gordon in 1889.
5 pounds. Caught on Daventry Reservoir in 1908.
5 pounds. Caught at Upway, Dorset, in 1870.
4 pounds 14 ounces. Caught on the New River. (Recorded by J. W. Martin.)

4 pounds 13¼ ounces. Caught from a pool in Derbyshire by Mr. R. Graham in 1911. Mr. Graham had other perch from the same water, which weighed respectively 4 pounds 12 ounces, 4 pounds 6¼ ounces, 3 pounds 13½ ounces, 3 pounds 11½ ounces—quite the most remarkable sequence of big perch in angling history."

Ireland holds the record for heavy pike. But conditions which produce big pike you would suppose should also favour perch. It is a curious fact that records of big perch came not from Ireland, but from England.

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PRINTED IN GREAT BRITAIN BY
BILLING AND SONS LTD., GUILDFORD AND ESHER

1935